

DISTRIBUTION MAGAZINE

AUG 13 1946

LOS ANGELES PUBLIC LIBRARY AUGUST, 1946

STAC
REFERENCE
MAG. LOAN
THAT INTEGRATES ALL PHASES OF DISTRIBUTION



THIS
MONTH

MARKETING
(INDUSTRIAL)

In Relation to TRANSPORTATION • HANDLING • FINANCE • INSURANCE
PACKING and PACKAGING • WAREHOUSING • SERVICE and MAINTENANCE



A 350 TON MERRY-GO-ROUND!

As one of the nation's largest producers of concrete building blocks, The Geist Coal and Supply Company, Cleveland, Ohio, was among the first to face the demand for increased production to meet urgent building requirements. Producing two million blocks during 1943, the company still had to turn down as many orders as it accepted. A critical shortage of full-time, experienced help and the lack of additional production machinery stymied efforts to increase production.

Seeking a solution to the problem, Geist devised a plan for operating 24 hours a day, using

part-time labor and depending upon a modern Towmotor handling system to maintain an uninterrupted flow of production. Today, Geist production figures are among the three or four highest in the country, its daily output of 25,000 blocks—an increase of 400% over the 1943 figure—represents maximum machine capacity.

Towmotors on this operation transport 350 tons of blocks per day from block-making machines to curing rooms and to stockpiles and shipping. At this point, empty racks and steel loading plates are picked up by the Towmotors and returned to the machines,

where the cycle begins anew.

For every handling problem there is an engineered solution . . . a solution based upon Towmotor experience and "know-how" gained in solving handling problems in every industry. Send for your copy of the Towmotor Lift Truck ANALYSIS GUIDE today. Towmotor Corporation, 1235 East 152nd Street, Cleveland 10, Ohio.

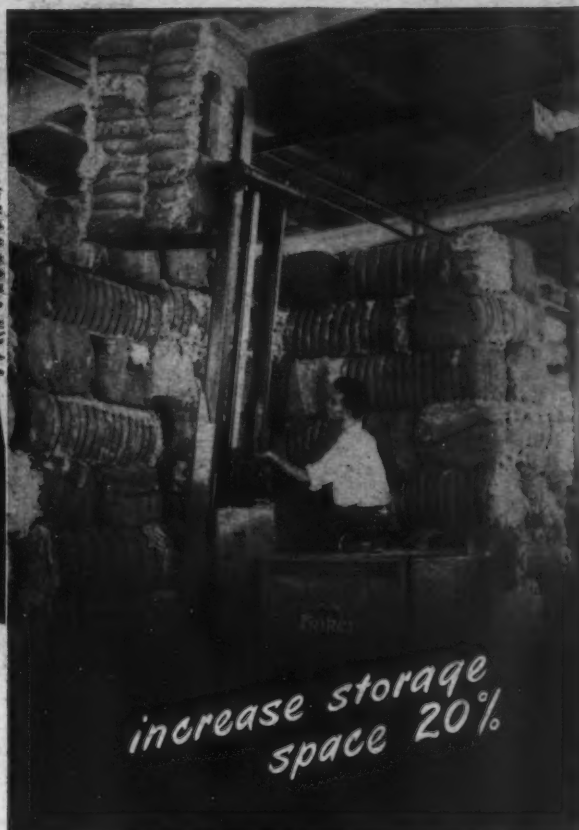
TAKE IT UP WITH
TOWMOTOR
THE ONE-MAN-GANG

Baker Trucks at the House of KARAGHEUSIAN



-cut man hours for handling by 50%

Baker Fork Trucks at the Roselle, N. J. Spinning Plant of A. and M. Karagheusian, Inc., make these savings handling heavy bulky bales of wool.



increase storage space 20%

This company is one of the world's largest manufacturers and importers of Chinese and Persian carpets, as well as a leading manufacturer of domestic rugs. Bales of wool, weighing from 350 to 1200 lbs. are received in carload lots from all parts of the world. The Baker Fork Trucks unload these bales and transport them to storage and processing departments—saving up to 50% in manpower hours over former methods. One of the trucks stacks bales for storage to a height of over 200 inches, enabling the company to use up to 20% more

warehouse space.

At the Roselle plant, the wool is processed by washing, scouring, dyeing, and spinning into yarn. It is then shipped to other plants where it is woven into the nationally known "Gulistan" rugs for which the House of Karagheusian is famous.

Our files contain many case histories of Baker Trucks making similar savings in all types of plant and warehouse operations. A Baker Material Handling Engineer will gladly show you how they may be applied to your problem.



Member:

Electric Industrial
Truck Association

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company

2176 West 25th Street • Cleveland, Ohio
In Canada: Railway and Power Engineering Corporation, Limited





Aviation's Vital Ground Link

TWO BIG REASONS why air travel is so safe and comfortable *all the way* are modern motor trucks and busses. No other industry is more conscious of quality engineering from a performance and safety standpoint . . . and none has given more universal acceptance to White Super Power Trucks and White Coaches.

Since the first air mail was flown . . . White Trucks have helped to

build and maintain airports . . . they are a familiar sight on every flight, refueling planes, hauling mail, cargo, meals. And today's larger passenger planes are calling into service increasing numbers of White 45-passenger coaches to provide transportation between airports and city terminals.

The many trans-

portation links which White provides in aviation's chain of needs have given rise to a saying among aviation men, which truck owners have known for many years . . . "White knows transportation from the ground up."

THE WHITE MOTOR COMPANY

Cleveland, Ohio, U. S. A.

THE WHITE MOTOR COMPANY
OF CANADA, LIMITED
Factory at Montreal





THIS MONTH'S COVER crystallizes the idea of industrial marketing: product, buyer and seller.

H. S. WEBSTER, JR.
Vice-President and General Manager

CHARLES DOWNES
Editor

GEORGE POST
Assistant Manager

Associate Editors: Joel Keith, David J. Witherspoon. Staff Artist: Delbert Palmer.

Consultants: Materials Handling, Matthew W. Potts; Traffic, Henry G. Elwell; Air Cargo, John H. Frederick; International Trade, George F. Bauer; Legal, Leo T. Parker; Packing, C. L. Saperstein.

Special Correspondents: Arnold Kruckman, Washington, D. C.; Fred Merish, New York; Randall R. Howard, Chicago; R. Raymond Kay, Los Angeles; H. F. Neves, Detroit.

Advertising Staff

Central Western Mgr.

A. H. Ringwalt, 340 N. Michigan Ave., Chicago 1, Ill. Franklin 0829

Cleveland Representative

H. F. Smurthwaite, 858 Hanna Bldg., Cleveland 15, Ohio. Main 6972

Western Representative

Duncan A. Scott & Co., Mills Bldg., San Francisco 4, Cal., Sutter 1393; 408 Pershing Square Bldg., Los Angeles 13, Cal. Michigan 0921.

Special Representative

Duncan P. Macpherson, 700 S. Washington Sq., Philadelphia 6, Pa.

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Washington Member Editorial Board: Paul Wooten.

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AUGUST, 1946

VOL. 45, NO. 7

DISTRIBUTION AGE

AUGUST, 1946

THE MAGAZINE THAT INTEGRATES ALL PHASES OF DISTRIBUTION

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BASIC POLICY

EVERY business is engaged in and affected by distribution. All firms, industrial and mercantile, are shippers as well as receivers; all use transportation; all are confronted with handling and packing problems; all are concerned to some extent with the proper storage of raw materials or finished products; all have to deal with vexing financial and marketing questions; all need insurance; all have to consider service and maintenance of one kind or another. These are all phases of distribution, which begins before production with the movement of raw materials, and continues after production until a finished product reaches its ultimate destination, the final user or consumer.

DISTRIBUTION AGE believes that costs can be cut by better integration of all phases of distribution; that a part of the resultant savings should be passed on to consumers to increase buying power; that by intelligent simplification and standardization of methods and practices distribution can be made more efficient and profitable in all branches of commerce and industry. The policy of this publication is to assist business management in the attainment of those objectives.



Announcing...

FISK INDUSTRIAL SOLID TIRES

with NEOPRENE CONSTRUCTION



GROOVED TREAD

Best for the heavy loads. Grooved tread spreads the wear evenly.



NON-SKID TREAD

Best on damp surfaces, on ramps and where the going is rough.



PLAIN TREAD

Makes steering easier, provides longer wear. Popular for all types of service.



MULTI-CUSH

Cushions the ride and provides good traction. Best for hauling "handle with care" loads.

YOU GET THESE ADVANTAGES

TREAD STOCK. Neoprene is scientifically treated for low rolling resistance, consequently wears slow and evenly. Cutting, chipping and abrasion are minimized with this new construction.

DIRECT BONDING. Natural rubber binding stock applied to steel rims, bonds tire firmly.

LAMINATED TREAD. Applied hot from the calender, layer on layer, even distribution is

assured. Fisk is an all-tread tire.

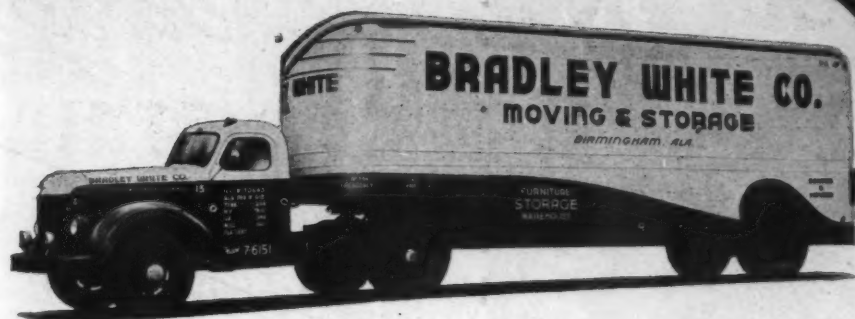
UNIFORM HEIGHT. All tires are strictly uniform, since laminated tread fits more evenly in the mold.

When outfitting your industrial trucks, tractors and trailers, be sure of the best with Fisk. See your Fisk Distributor for full details. Fisk Tire Company, Division of United States Rubber Company.

FISK

INDUSTRIAL SOLID TIRES





Buy HERMAN VAN TRAILERS

Get all these advantages...

• SIZABLE SAVINGS

The price of a Herman van trailer to you is low because it is a direct "factory-to-you" transaction. No commissions. No middleman's profit . . . no out-of-town overhead to pay for. Dealing direct with Herman gives you Dollar savings—plus other benefits.

• EXPERIENCED PRODUCTION

From start to finish, your order is under the personal supervision of a Herman executive, who knows the requirements of the furniture and warehousing industry in addition to the technique of building better bodies. A Herman is RIGHT in every way. It's "INDUSTRY DESIGNED."

• ALL-STEEL . . . ALL-WELDED

Years of experience building hundreds of van trailers has taught us how to put the most value into All-Steel . . . All-Welded construction . . . bodies that look better, last longer . . . and operate with lowest maintenance costs. Quality equipment that makes you proud to own a HERMAN.

**DIRECT
FROM OUR
FACTORY
TO
YOU**

**IT'S EASY
TO DEAL
with HERMAN**

Just write to E. C. Simmons at Herman Body Co., St. Louis. He specializes in van trailers exclusively. He will send you photographs, drawings and complete description. Later he will discuss the details with you by phone.

**HERMAN
BODY COMPANY
4400 CLAYTON AVE.
ST. LOUIS 10, MISSOURI**

Only TWA **Offers All Five!**

1. ONE RATE FOR ALL COMMODITIES

Former rate differentials between the types of commodities shipped have been entirely eliminated. Now a single rate structure is in force, covering whatever items you have for shipment by TWA.

2. NEW REDUCED RATES

Recent arrangements have reduced airfreight rates between all points in the United States, making the speed and frequency of TWA Airfreight service advantages that are more worth while than they have ever been.

4. EVERY FLIGHT AN AIRFREIGHT FLIGHT

Cargo is carried on all TWA flights—including high-speed 4-engine Stratoliners and record-speed non-stop Constellations that only TWA provides within the United States—in addition to daily all-cargo SKYFREIGHTER flights.

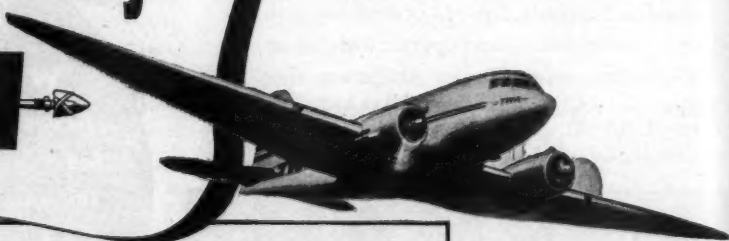
3. DIRECT SERVICE TO 82 CITIES

Interline arrangements with four connecting airlines—Braniff Airways, Continental Air Lines, Inland Airlines and Western Air Lines—extend TWA's direct airfreight service to 82 major cities.

5. SINGLE AIR BILL ON INTERLINE SHIPMENTS

On interline shipments, involving any of the four connecting airlines above, a single air bill is all that is required to cover shipments all the way from shipper to consignee.

Airfreight by TWA



**Less Transit Time —
More Sales Time**

International air express service to Europe and the Middle East, as well.

Now! LIFT, MOVE, STACK Materials Electrically with NEW TRANSTACKER

Low price brings modern material handling methods within reach of all!

NOW for the first time every business—every industry can use modern, money-saving material handling methods at new low cost.

Because in the new Transtacker, Automatic's engineers have developed a high-lift stacker that sells for as low as \$1800. And while it will move, lift and stack up to 4000 pounds, it weighs only 1900 pounds. This means you can safely use Transtacker, even if your floor and elevator capacities are limited.

With all the advantages of the famed Transporter that moves any kind of material with amazing "touch-of-your-thumb" ease, Transtacker now gives you an electric hydraulic lift that stacks your product at new heights to increase storage capacity. With finger-tip control it lifts up to 4000 pound loads in a matter of seconds... smooth, controlled lowering speed for utmost safety. Mail coupon for facts.

OPEN FACE PALLET TYPE TRANSTACKER
—Capacity 3000 pounds—With suitable forks for stacking open face pallet loads.

SUSPENDED LOAD TYPE PALLET TRANSTACKER—Capacity 2500 pounds—With suitable forks for stacking double or open face pallets.

STRADDLE TYPE PALLET TRANSTACKER—Capacity 4000 pounds—With suitable forks for stacking double face or open face pallet loads.

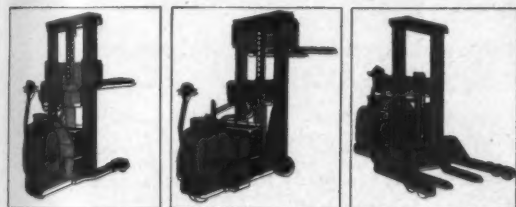
PRICED AT ONLY

\$1800

(Some Models Slightly Higher)

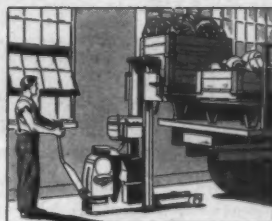
PLATFORM TYPE TRANSTACKER

Capacity 4000 pounds
For stacking unit loads on skid platforms.



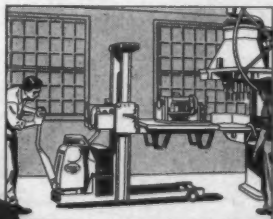
FINGER TIP CONTROLS LOAD

Cartons, crated goods, hard-to-handle material—one man or girl hauls, lifts and stacks to full storage heights.



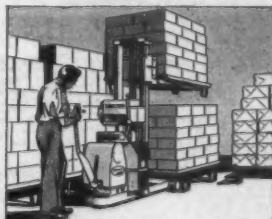
ENORMOUS SAVINGS IN SHIPPING

Pick up merchandise from ground level and deposit it on truck or trailer. A three-man operation becomes a one-man operation.



LIFTS HEAVY MACHINE PARTS

When heavy machine parts must be lifted to working height, let Transtacker safely lift it and place it.



ENDS BACK-BREAKING HANDLING

This can be your trucker—easily, efficiently stacking your material with Transtacker. Extra storage space is yours free.

PRE-TESTED IN INDUSTRY

- 1 Cuts loading and unloading time in half.
- 2 One man does the work of three with less effort—Transtacker cuts handling costs up to 60%.
- 3 Light in weight for limited floor and elevator load capacity.
- 4 Hauls any kind of product with "touch-of-thumb" ease.
- 5 Gives you extra storage space without added cost.
- 6 Lifts and stacks product from ground level to trucks and trailers.

LOOK TO THE LEADER
FOR ALL THAT'S NEW!

AUTOMATIC TRANSPORTATION COMPANY

DIV. OF THE YALE & TOWNE MFG. CO.

115 West 87th St., Dept. M, Chicago 20, Illinois

Please mail me without cost or obligation, complete facts about the NEW TRANSTACKER.

() Have an A.T.C. Specialist call and survey my material handling costs.

Company Name.....

By..... Position.....

Street Address.....

City..... State.....

AUGUST, 1946



(3) The Covered Hopper Car



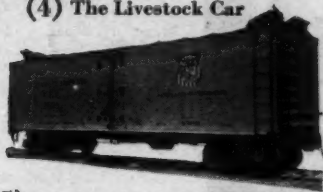
(2) The Tank Car



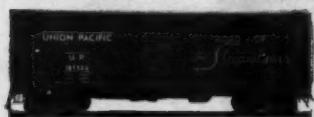
(1) The Hopper Car



(4) The Livestock Car



(5) The Refrigerator (P.F.E.) Car



(6) The Box Car



(7) The Gondola



(8) The Flatcar



(9) The Automobile Car



Transportation Tailored to *YOUR* INDUSTRY

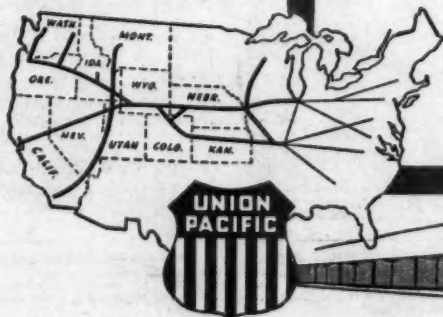
To most effectively meet the needs of American Industry, Union Pacific provides a fleet of freight cars specifically designed to transport all types of materials and merchandise.

Sturdily constructed and efficient in mechanical operation are the various types of freight cars pictured on this page. This safe, dependable rolling stock is a vital factor in providing transportation for the commerce of the nation.

The trained knowledge and experienced skill of thousands of Union Pacific employees keep shipments rolling on schedule over the time-saving Strategic Middle Route, uniting the East with the West Coast. Experienced traffic specialists, from coast-to-coast, are ready to assist you. Let them help you with your *next* shipment.

For fast, dependable service . . .

be Specific -
say "Union Pacific"



★ Union Pacific will, upon request, gladly furnish industrial or mercantile concerns with information regarding available sites having trackage facilities in the territory it serves. Address Union Pacific Railroad, Omaha 2, Nebraska.



UNION PACIFIC RAILROAD
The Strategic Middle Route

HUGE CAPACITY! CURB-LEVEL LOADING!

**WITH ALL THE STRENGTH OF
TRAILMOBILE'S FAMED LP**



ENGINEERING BY ELECTRONICS

**NOW creates a "drop-frame" with
RUGGEDNESS IDENTICAL TO THAT OF
STRONGEST "STRAIGHT-FRAME" VANS**

All the extra pay-load space, with floor at almost "street level," is now available without the weaknesses of former "similar" models.

No longer is the "drop-frame" merely a body placed up on a "cut-down" chassis. This newest, much bigger Trailmobile is engineered as one prescribed unit! So it maintains the character of all other Trailmobiles—each model made the strongest possible trailer of its type and weight—according to exclusive ELECTRONIC stress-measurement.*

The "rails" of this Trailmobile under-structure are typical load-distributing beams, that "spread" load-concentrations throughout many bolsters! These rails are joined to those in front of the drop by a new-type bulkhead and special formed-plate construction, that permits the "drop" to be as firm and strong as though it were a section of a regular "straight-beam frame" itself.

Bolsters are closely spaced and of unique outrigger design, integrally "tongued" to the rails, thereby preventing "buckling," and gaining all the strength of channel-shaped, solid members. Thus they employ completely all the extraordinary load-carrying capacity of Trailmobile's standard sides.

These sides are of double-trusses in

"diamond" arrangement, with big posts every 18 inches. The under-carriage is also Trailmobile's standard, acknowledged the "easiest pulling in the industry"—with tubular axles, our standard free springing, truly "horizontal" radius-rods properly rubber-bushed, and with all the oversize "parts" that increase resistance to side-play 25%.

So all in all, this model is ideal for heavy-duty hauling. It offers specific advantages to those with heavy, bulky freight, requiring low-level loading. See it at your nearby Trailmobile Branch.

*Write. Get the complete story of Trailmobile's design and construction by Electronic stress-measurement.

**THE TRAILMOBILE COMPANY
CINCINNATI 9, OHIO**



Protecting its 105 Year Reputation

- 71 "Homelinks" Service Centers

AUGUST, 1946

HERE'S WHY
MOVERS

are insisting on *Job-Rated* economy

Your experience with trucks tells you that a truck that *fits the job* . . . is a *better* truck.

You make *more* and *quicker* trips. You get maximum operating economy. Your truck stays on the job . . . and it lasts longer.

There's a Dodge *Job-Rated* truck engineered and built to fit *your* job.

It has the *right* engine power, the *right* clutch,

transmission and rear axle ratio to move the weights you carry. It has the *right* axles, springs, frame, and tires to carry *your* loads more dependably . . . and at rock-bottom cost.

That's why, today, so many movers are insisting on trucks that fit *their* jobs . . . dependable, economical, long-lasting Dodge *Job-Rated* trucks!

DODGE DIVISION OF CHRYSLER CORPORATION



DODGE *Job-Rated* **TRUCKS**
FIT THE JOB . . . LAST LONGER

ONLY DODGE BUILDS "Job-Rated" TRUCKS!

DISTRIBUTION AGE

When there's work to be done—efficiently . . . look to

Battery Powered

Industrial Trucks

Serving more than 300 fields of industry and distribution, electric industrial trucks perform material-handling tasks with a versatility and efficiency beyond those of any other system. You'll find the prime reason for this record in the following exclusive advantages of battery power—

PLANNED POWER RESERVE—with properly applied high-capacity batteries, you can have all the power you want, whenever you want it. Huge overload capacity, many times the normal output, delivers smooth surges of extra power for fast acceleration, for climbing ramps or handling the heaviest loads quickly and continually.

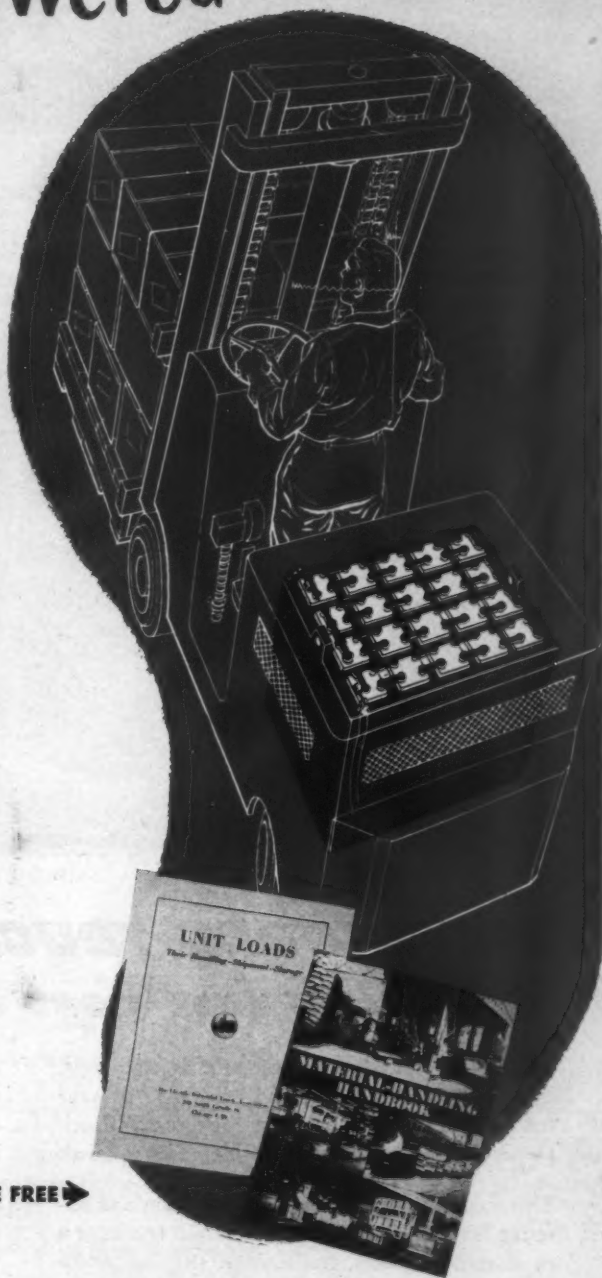
LOWEST COST ENERGY—Electric power—tops in reliability and economy for all industrial power requirements—excels as mobile power for material handling when used with efficient and trouble-free battery driven trucks.

24-HOUR OPERATION—month after month, year after year at lowest overall operating cost. On round-the-clock operations, the second and third shifts are furnished a fresh, cool ready-to-use power supply—no need for stand-by trucks. With shorter hours of use per day, batteries may remain in the trucks while charging.

BEST AND SAFEST EVERYWHERE—Battery power is quiet, clean and fume-free, eliminating product contamination. Other economy and fatigue-saving advantages include fingertip control, smooth effortless starting, safe tamper-proof speed, precise control when spotting loads, no idling cost in fuel or wear when not working.

These exclusive advantages are proved by the fact that more than 90 per cent of the electric industrial trucks sold in the past twenty years are still in service.

Ideas for immediate savings in the MATERIAL-HANDLING HANDBOOK and UNIT LOADS. **THEY'RE FREE** ➔



THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

208A South La Salle Street, Chicago 4, Illinois

Yes Sir! Anyway You Look at it...



MEYERCORD TRUCK DECALS will do a lasting low-cost advertising job!

Utilize the *free* advertising space on the tops, sidepanels, visors, backs and cab doors of *your* trucks...with weather-tested Meyercord Truck Decals. They're durable, washable, easily applied.

This modern method of truck decoration and lettering is economical to use for a dozen trucks or a thousand! Products, trademarks, slogans can be reproduced in any size, color or design at a fraction of handpainting time and cost. Overnight speed of application of Meyercord Truck Decals keeps your

trucks "on the street". Investigate this modern method of truck decoration...for your new fleet. Designing service free. Please address all your inquiries to Department 30-8.

FREE! TRUCK VISUALIZER

Contains helpful hints on lettering, decorating; with outline diagrams for experimental designing of many body types — from panel deliveries to vans and tank trucks. Send for your free copy... **TODAY!**



THE MEYERCORD CO., 5323 WEST LAKE STREET • CHICAGO 44, ILLINOIS

HERE'S IMPARTIAL PROOF MACKS LAST LONGEST!

1. FACT: 14% of all Mack Trucks on the road today were built before 1929...every seventh Mack is over 16 years old:



2. FACT: Closest runner-up, make "B" has only 10.3% trucks on the road with 16 years service to their credit.



3. FACT: Make "C" has only 7.8% trucks now in use 16 years.



4. FACT: Make "D" has only 6.6% of their trucks still operating after 16 years.



(The basic figures are from the latest authoritative national survey of truck registrations, by R. L. Polk & Co.)

MORE Mack Trucks are still rolling profitably for owners—years after they've paid for themselves in dependable service—than any other make.

Mack
TRUCKS
FOR EVERY PURPOSE



**Performance
Counts!**

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.



This new Fruehauf Furniture Van is but one of 18 Fruehaufs in the fleet.

*Dad Schlairet
and his boys use
FRUEHAUFS!*



Back Row—Lawrence Schlairet,
E. A. Schlairet, Paul Schlairet
Front Row—James Schlairet and
Charles Schlairet

• There's just no stopping this busy Ohio family! Their business is evidence of their progress. Confining their operation within this State, the Schlairets, of Mt. Vernon, Ohio, have grown from a small one-man office in the old Gas House to three modern offices with 55 employees in Mt. Vernon, Columbus, and Marion—with freight terminals in all these three cities and Delaware, Ohio, as well.

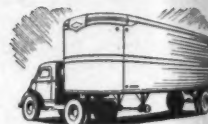
**80,000 Lbs. A MONTH IN 1919 . . .
NOW 1,500,000 Lbs. A DAY!**

When E. A. (Dad) Schlairet started hauling over mud roads to Columbus with a single truck, the monthly total of 80,000 lbs. of freight seemed like a staggering figure. Today, with 18 Fruehauf Trailers and a fleet of trucks, the company moves 1,500,000 lbs. a day with ease. "And," as Dad Schlairet says, "when our operations increase, we'll add still more Fruehaufs!"



TRAILERS FOR EVERY TYPE LOAD

Tractor-Trailer units which haul the bulk of this freight serve customers well in this area. "From open-top Trailers for rough freight, to closed Vans of varied sizes for delicate furniture and merchandise, there's practically no limitation to the hauling jobs we do."



Your nearest Fruehauf transportation engineer can tell you of many such success stories—of where Fruehaufs have played an important part in giving the kind of service that pays dividends to the user. Get the facts about the new 1946 Fruehauf line.

World's Largest Builders of Truck-Trailers
FRUEHAUF TRAILER CO., DETROIT 32
8 Factories—62 Factory Service Branches

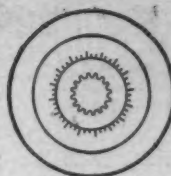
FRUEHAUF TRAILERS



THIS STORY IS AMERICA—
WHERE YOU ARE FREE TO GET AHEAD.
LET'S KEEP IT THAT WAY!

"ENGINEERED
TRANSPORTATION"

EDITORIALS



A Point of Distinction

EARLY in the preparation of this issue, which focuses attention on the marketing of industrial products and services in relation to other phases of distribution, it became necessary to clarify the difference between industrial products and consumer goods. We reached the following conclusions:

1. Industrial products are raw materials, semi-finished or finished commodities used commercially by the ultimate buyer for the production or distribution of other commodities.

2. Consumer goods are raw materials, semi-finished or finished commodities used or consumed noncommercially by the ultimate buyer.

Iron ore, obviously, is an industrial raw material. Metal stampings are semi-finished industrial products. Steel rails are finished industrial commodities. All are used commercially; the first two, for the production of other commodities; the third, for transportation.

In contrast, from the viewpoint of the housewife, powdered cocoa is a raw material used for making a beverage or for flavoring; so called deep freeze and dehydrated foods, for the most part, are semifinished products, since they require some preparation or cooking to make them edible; nylon stockings are finished goods ready to wear. Generally, all are bought for personal, noncommercial use or consumption by the ultimate buyer.

Sometimes, however, the distinction is not so apparent. Wheat flour, for example, is a finished product to the miller, but to the baker, who is a bread manufacturer, and to the housewife, who bakes her own pies, flour is a raw material. It is sold as an industrial product to commercial bakeries, and as a consumer item in grocery stores. It is used similarly by baker and housewife in the making of products for human consumption. The difference is that the baker produces bread and pie commercially for profit, while the housewife bakes noncommercially for household consumption only.

It is this ultimate use of a commodity that determines its category as an industrial or consumer product. In the final analysis, industrial as well as mercantile products and services are bought by the ultimate purchaser to facilitate the making or marketing of other commodities intended for sale, whereas, consumer goods and services are bought by the ultimate buyer for noncommercial use or consumption.

Amortizing Durable Goods

PRODUCERS of durable goods experience higher peaks of prosperity and deeper valleys of depression than do manufacturers of non-durable goods.

Statistics show that while the volume of non-durable manufactures rose only 26 percent above the decade-average in 1929, durable manufactures rose to 32 percent. During the depression of the early 30s, when nondurable manufactures fell 11 percent below and suffered only a two-year depression, durable manufactures fell 58 percent below the decade level, and suffered a six-year depression. During the height of the recent war, nondurable production rose 50 percent above the 1935-39 average of the Federal Reserve Index, while durable manufactures, at their maximum, rose about 134 percent.

Several means of controlling these radical fluctuations in the durable goods industry were suggested recently by John E. Wiley, New York advertising executive, in an address before the National Industrial Advertisers Assn. Conspicuous among his suggestions was one on amortizing durable goods.

Our present system of taxation, which encourages management to amortize the purchase of durable goods over a long period, Mr. Wiley believes, contributes to business depressions.

Many durable goods are capitalized when they might be paid for out of earnings, he says. If more machinery for industry were bought on a time payment plan, comparable with the way we buy automobiles and household appliances, "doesn't it stand to reason," he asks, "that purchases would be more continuous and that there would be fewer and less violent ups and downs in the durable goods field?"

He believes that if management were persuaded to budget the purchase of machines on a basis of five or 10-year periods it would help the durable goods industry to smooth out the peaks and valleys caused by the irregular expansion and contraction of its business activity. This, in turn, presumably, would benefit all industry. Certainly, the idea is worth investigation.

Charles Dornica

EDITOR

NEXT MONTH in **DISTRIBUTION AGE**

THE September issue will deal largely with the marketing of consumer goods. Some of the major features scheduled are:

MARKETING TRENDS . . . by R. F. Chisholm, vice president and sales manager, Gordon and MacKay & Co., Ltd., Toronto, who discusses, among other characteristics of marketing, the trend in retailing towards diversification.

THE PLACE OF RETAILING IN DISTRIBUTION . . . by Gordon K. Creighton, assistant general manager, National Retail Dry Goods Assn., who states that the retailer's prime function is to act as the purchasing agent of the consumer and that, fundamentally, it is re-orders rather than orders which maintain the flow of merchandise.

FINANCING THE DISTRIBUTION OF CONSUMER GOODS . . . by E. A. Mattison, executive vice president, Bank of America, who demonstrates how modern banking has set up financing formulas for virtually every aspect of the production and distribution of industrial and consumer products, and that these specialized services are available to manufacturers, wholesalers and retailers in the entire consumer goods field.

PLASTICS AND THE PUBLIC . . . by Charles M. Edwards, Jr., dean, School of Retailing, New York University, who stresses the necessity of simplification of trade nomenclature in the rapidly expanding plastics industry.

FACING FACTS IN DISTRIBUTION . . . by Victor Lebow, sales manager, Chester H. Roth Co., Inc., who declares that "no matter how the business community may evade the problems of consumption, in the field of distribution we come directly face to face with the factors which determine the consumption power of this country—factors which govern wage rates, standards of living and the equitable distribution of goods."

Letters TO THE Editor

Post Office Profits

Sir:

In connection with the interesting article by Dr. John H. Frederick in the June issue of *DISTRIBUTION AGE*, entitled "Will All Mail Be Air Mail?", it seems to me that one very important consideration is entirely overlooked; that is, the financial effect upon the operations of the Post Office if the profit which is now earned on letter mail carried by train is eliminated or very largely reduced, as would be the case if such letters all were to be carried by plane.

In the evangelism for carrying all mail by air, this subject somehow gets itself overlooked. And yet were it not for the earnings made by the Post Office on the carriage of letter mail by train, many other valuable services of the Department, such as its low rates on second class mail for the distribution of publications and on parcel-post, would have to be raised or the taxpayers would have to be tapped for additional millions of dollars.

This leads me to suggest the desirability, in the interest of level-headed consideration of this question, of an article touching upon its financial aspects. Such an article, I believe, would be unique among the published material on the subject.—**Robert S. Henry, Assistant to the President, Assn. of American Railroads, Washington, D. C.**

Editor's Note: We have asked Mr. Henry to provide an article of the type he mentions for publication in an early issue.

Mr. Lyons Dissents

Sir:

As I have been out of the country for the past four months your editorials entitled "Foreign Trade Zone Privileges for Customs Bonded Warehouses" and "Rights Without Duties" on page 19 of the Feb., 1946 issue have just come to my attention.

Although these captions cover different subject matter, it so happens that the second title "Rights Without Duties" would more appropriately describe Mr. Gutter's proposal to extend foreign trade zone privileges to warehouses. Mr. Gutter asks for all of the good features of the foreign trade zone (from a warehouseman's viewpoint) but he has carefully omitted saddling his clients (the warehousemen) with any of the responsibilities that a foreign trade zone must assume. In other words, in his persuasive way he asks for "rights without duties."

Under the law a foreign trade

zone must be operated as a public utility with equal services and charges for all. Tariffs must be posted for public inspection. The operator is subject to heavy fines and penalties for violation of law and regulations. The grantee must prepare and transmit to the Congress an annual report describing all activities performed in the zone, along with a detailed financial statement. H. R. 4707 conveniently omits all of these restrictions. Bitter with the sweet does not mar his proposal. "Rights Without Duties" would have been a fitting caption for the first mentioned editorial.

As *DISTRIBUTION AGE* is dedicated to all phases of distribution, why not have this publication get behind a program which will aid in developing our all important import and consignment trade. A limited number of properly organized and equipped foreign trade zones at shipside in our major ports will serve to attract additional traffic to our shores; traffic, much of which will ultimately find its way into the bonded and free sections of the merchandise warehouses throughout the nation.—**Thomas E. Lyons, executive secretary, Foreign-Trade Zones Board.**

Editor's Note: To a degree, perhaps, Mr. Lyons' argument is sound. But the provisions both of the Foreign Trade Zones Act of 1934 and the so-called Rabin bill are subject to different legal interpretations. Moreover, we still believe that customs bonded warehouses, as a matter of common equity, should have privileges similar in character to those that have been granted legally to foreign trade zones. Each also should be bound by the same laws and regulations.

Packing

Sir:

I read an article in a recent issue of *DISTRIBUTION AGE* entitled "The Fifth Dimension in Packing" by Charles L. Saperstein. I was very much interested by the article, and would like to know where I can obtain more information with regard to this type of packing and palletizing.—**E. B. Inlow, purchasing agent, A. P. Green Fire Brick Co., Mexico, Mo.**

Mr. Saperstein's reply: In view of your interest in packing, may I suggest that you write to Forest Products Laboratory, University of Wisconsin, Madison, Wis., and ask for booklets and pamphlets on the subject. Describe the type of material you are interested in packing.

You'll meet "Highways" wherever you go

ALL over America, "on every U.S. highway," Highway Warehouseman's Vans are setting new standards of commercial trailer values.

Movers and Warehousemen of long experience have discovered all the advantages they have always hoped to find combined in a single vehicle.

For over a quarter of a century Highway trailer engineers have made it their business to know the requirements of motor trans-

port—requirements which have never before been so strict as now. That's why Highway's is a *manufacturing* rather than an assembling operation.

Easy handling—economy of operation—extra years of trouble-free performance in hard service—all these are among the benefits that go with every Highway Trailer. Write today for free color booklets, and learn why it will pay you to "let your next trailers be Highways."

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HIGHWAY AMERICA'S QUALITY TRAILERS

A TIP FOR YOU MR. PRESIDENT

WE MEAN YOU, MR. MANUFACTURER,
MR. WHOLESALER, MR. RETAILER, MR. BUSINESS EXECUTIVE

*Three magic words will get you into production . . .
faster . . . get your goods on sales counters quicker . . .
and help you beat competition by days . . . even weeks*

WE DID IT IN WAR, AND AGAIN WE'RE DOING IT IN PEACE

YOU'VE guessed the three words we mean . . . if you ever used motor freight.

Truck freight goes direct. The load is picked up when you're ready . . . goes out as soon as you wish . . . goes direct, by the shortest possible route. Trucks can be routed direct to the factory, assembly line, store or warehouse. There's no side-tracking. There's an absolute minimum of handling . . . of jolting . . . of breakage or other loss.

When you say "ship by truck," you save days . . . even weeks of precious time. And

you know what an edge that gives you . . . no matter what your business. Modern truck transport is often faster than the U. S. Mails . . . even on long hauls.

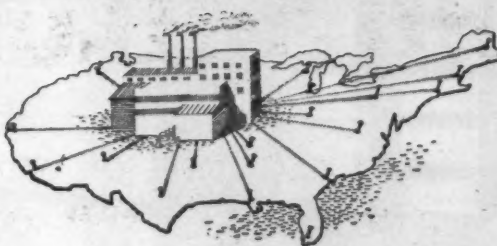
With pressure for deliveries what it is today, you can't afford to be without the extra advantages of flexibility, safety and—over-all economy that only trucks can offer. Make your own investigation of how trucks can help you . . . or write to your State Trucking Association . . . affiliated with ATA.



THE AMERICAN TRUCKING INDUSTRY
AMERICAN TRUCKING ASSOCIATIONS, WASHINGTON, D. C.

There are four basic steps to industrial distribution efficiency. 1. Realization by management that improvement is possible in physical distribution. 2. Analysis and cost computation of each operation. 3. Research to determine the best method for each operation. 4. Adequate organization so all operations can be coordinated smoothly.

Industrial Distribution



By JOHN D. SHEAHAN

Secretary-Treasurer

*Drake, Stevenson, Sheahan, Barclay, Inc.,
Distribution and Materials Handling Consultants, New York*

FOR a long time, business men whose responsibility it is to market America's goods have found it practical to consider the distribution of industrial products as different than distribution of consumer goods. Trade associations have been formed and trade journals established in the special field of industrial distribution, and college courses are offered to prepare men for entry into that field. Separation of industrial from consumer marketing has been especially advantageous in sales and advertising. Industrial purchasing agents are different from household consumers both in their methods and their psychology.

Differentiation between industrial and consumer products in the field of physical distribution, i. e., transportation, storage, handling, packing, etc., has received less attention. Yet in physical distribution, as in marketing there are significant differences between industrial and consumer goods. A company which recognizes those differences and builds its physical distribution system to take account of them may not show an immediate gain in volume but it certainly will show lower costs.

Take for example the palletized unit load. Wartime tests demonstrated that it took 682 man-hours of handling time to move 100 tons of loose cargo from contractor through supply depot and port to overseas user, whereas the same amount of palletized cargo could

be handled over the same route in 203 man-hours. Palletization saved 479 man-hours, a reduction of 70 percent in handling time.

Despite the success the armed forces had with the palletized unit load, there has been some reluctance about using palletization for commercial shipments. To a certain extent, shippers may be skeptical about palletization because they are thinking too largely in terms of consumer goods and ultimate delivery at retail. All those who have had experience with this method of shipment believe there is a place for palletization in consumer distribution. But the important consideration here is that there is an even larger place for it in industrial distribution.

The Ford Motor Co. recently announced a far-reaching program for palletized shipment of spare

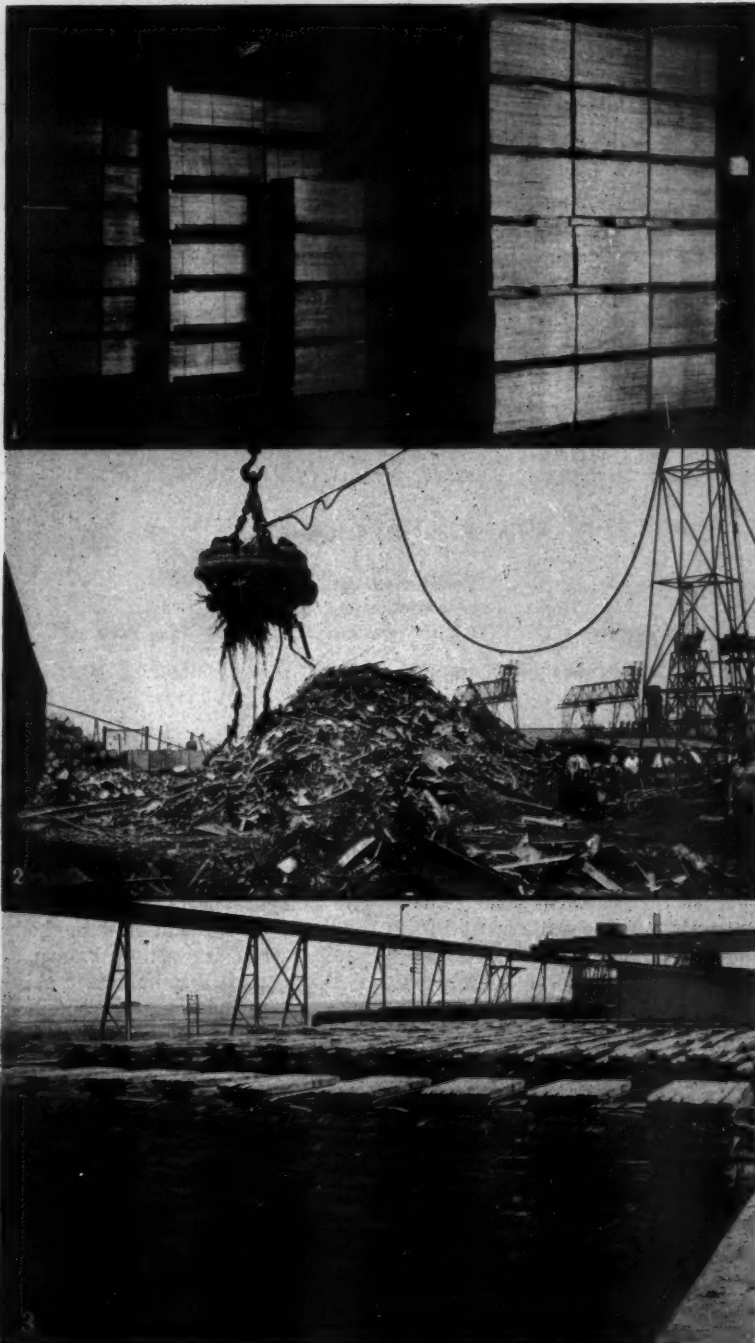
parts, both from one Ford plant to another and from outside suppliers to Ford plants. The company conducted tests to ascertain the best method of pallet loading and strapping for each of a number of spare parts, and computed the cost of old and new methods so that exact savings are known.

Ford found that palletized shipment of springs cut the combined car loading-unloading time from 96 to less than eight hours, a personnel saving of better than 80 percent. For delicate spindles, a \$400 expenditure per car for protective wooden boxes was eliminated by substituting a pallet-tray system at a cost (including pallet and tray depreciation and return) of only \$43.

Per-car savings of \$71 for springs, \$135 for generators, \$95

(Continued on page 84)

World Shortages



WORLD shortages of raw materials are more than serious; they are grave.

Apparently the significance is not clear to the average business man. Most people, even industrialists, seem to think the situation is parallel to the conditions which confronted them after World War 1. They seem to expect that when the functional machinery of the world's economy begins to move raw materials will be developed and production will become normal.

It is curious that even those in a position to know do not seem to realize fully that World War 2 was unique. Never in the history of humanity has there been such vast global consumption of raw materials, and such stupendous waste and destruction of all kinds in such a relatively short time.

Unlike previous wars, the prime object of the one just concluded was not merely destruction of the enemy's manpower and war materiel, it was planned and waged to wipe out his economy and all the things that made his economy function. Apparently few of us realized that in embarking on this vast program of destruction, we also were knocking over that house of cards which, for the want of a better term, we might call our global socio-economy. Obviously, it is the effect of this catastrophe which must be met in rebuilding an economy, as well as a social structure.

To fill the gaps that cannot be closed up with needed materials either because they have disappeared or have dwindled to negligible quantities, we must find fresh sources of supply or devise

1. TIN PLATE
2. SCRAP STEEL
3. COPPER

DISTRIBUTION AGE

es of Raw Materials

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substitutes—substitutes in materials, or substitutes in methods of using our diminished volume of supplies.

The troubles Housing Expediter Wyatt is having with his program are striking examples of some phases of the results of scarcities as they hit us at home. The veterans want homes; everybody wants homes; and almost everybody else wishes to build a store, a theater, a factory, a warehouse, a hospital, or some other non-residential structure. Messrs. Wyatt and Bowles assumed that obvious scarcities could be corrected by a dollars-and-cents incentive. They convinced Congress, and obtained \$400,000,000 to pay subsidies or premiums to those who would get into production. But when they tried to find places and people for the expenditure of the money they were amazed to discover that there virtually is no place to spend it.

The producer of building materials and equipment, good example of the whole economy, is not seeking financial incentives: he wants materials. Months after the \$400,000,000 was placed in the Treasury to Wyatt's credit, he has been able to spend only \$5,000,000! At this writing, he and his associates apparently have just begun to get a glimmering of the fact that if you use materials to produce building supplies you cannot have materials to make refrigerators, electric irons, automobiles, vacuum cleaners, railroad cars, washing machines, and innumerable other desperate "musts" of the moment.

This has led one bright mind here to perceive that if you cannot make washing machines, it may be logical for the housewife to fall back on the old wash tub, at least until the world's economy is readjusted; or she may make

By ARNOLD KRUCKMAN

Washington Correspondent

more use of the community facility, the commercial power laundry, which, in turn, some believe, may become a public utility.

The automobile people have realized that steel inevitably will be so short, particularly sheet steel and galvanized sheets, that they have re-set their sights for 1947 and 1948, and now say it will not be feasible to produce 6,500,000 cars and 1,500,000 trucks annually, but that the maximum over-all output in 1947 will be from 4,750,000 to 4,800,000 units, and in 1948, 6,000,000 vehicles.

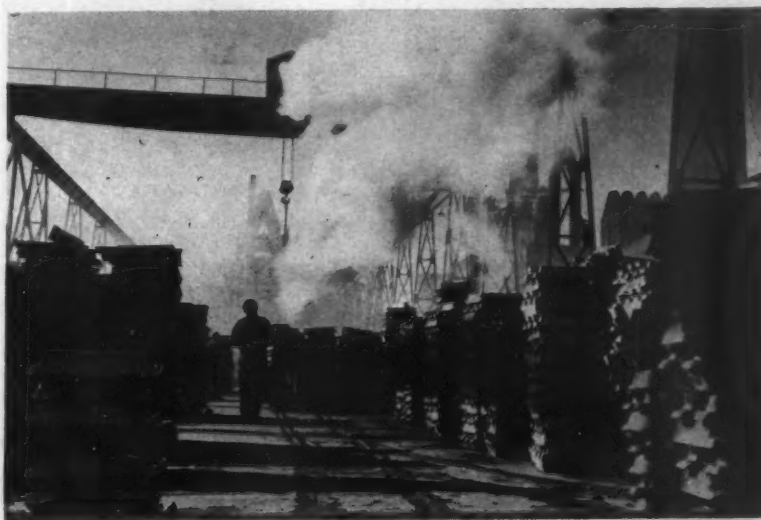
The point chiefly to bear in mind is that when lead, copper, tin, zinc, iron, lumber, fibers, and many other materials are scarce, substitutes must be used, possibly synthetics, or our economy, industrial and social, must make shift with simpler things until new

ways are found to accomplish the results that cannot be accomplished at present because of scarce materials.

The genius of the American people may solve the problems caused by our lacks through more efficient and economical methods of distribution, long advocated by this paper. Better coordinated methods of transport, better technology in storage, warehousing and handling, more scientific costing and less wasteful marketing are sorely needed if we are to avoid the brutalities of collectivist political systems. American economic history proves our adaptability.

As Dr. Arthur E. Morgan, the first head of TVA, in his book, "A Business of My Own," points out: "It is part of the genius of America that she does not rely on any one kind of social and economic order." He then shows that our public school system and fire prevention services are provided to every one alike at general public expense; that postal service and

LEAD



municipal water supplies though provided by government, are paid for by individuals according to use; that our highways are paid for partly by government and partly by users through the gasoline tax; that our public utilities and transportation systems are operated by private management under government supervision. Dr. Morgan, in no sense of New Dealer, closes the paragraph with these illuminating words: "There is a deep intuitive wisdom in this American tolerance of economic variety and in our refusal to commit ourselves to any one social and economic system. It is recognition of the fact that life and truth are too varied and complex to be confined within the pattern of any single deliberately planned economic system."

Present shortages give this added point. Practically all primary raw materials are scarce, extremely short, or have almost reached the vanishing point. Less than 40 percent of primary pig lead is being produced. Strikes are the immediate local cause; coal shortage is another; transportation curtailment is a third reason; and the OPA ceiling of 6.5c compared with the world price of 8.09c, until recently was another potent reason. But probably the chief reason is the absence of prime lead, and the intimation that it will continue very scarce until new sources are found.

Some Highlights

THE point chiefly to bear in mind is that when lead, copper, tin, zinc, iron, lumber, rubber, fibers, and many other materials are scarce, substitutes must be used, possibly synthetics, or our economy must make shift with simpler things until new ways are found to accomplish the results that cannot be accomplished at present because of scarce materials.

Practically all primary raw materials are scarce, extremely short, or have almost reached the vanishing point.

Less than 40 percent of primary pig lead is being produced. New sources are needed.

Copper production is less than 33 percent of normal output, and government stocks have been reduced to the danger point.

Stocks of slab zinc are very low, and imports have decreased 30 percent.

Tin continues to be one of the most critical needs. At present it is reported to be about 35 percent below the absolute restricted requirements for the year, which is 65,000 tons.

The steel scrap situation is described as desperate, and pig iron production is off 15 percent, with prospects uncertain.

Rubber still is scarce, and the future of synthetic rubber remains undetermined.

Other major industrial shortages include lumber, hides and skins, industrial alcohol, paper products, sugar and corn.

Millions of products cannot be supplied until the problem of shortages in these and other raw materials is solved.

Strikes are blamed for the critical supply of copper. Production is less than 33 percent of normal output. The foreign supply is uncertain. Government stocks here have been reduced to the danger point. The prediction is that it will take at least six months to adjust

the copper production and fabrication program to the point where it will be useful to the American economy, which, at present, virtually means global economy. Not only American industry, but men and women in many other parts of the world, anxiously await the output of the American electrical industry which is now stymied chiefly for lack of copper. Millions of products, such as fractional horsepower motors, integral parts of major assemblies, cannot be supplied until the copper problem is solved. In some instances the lack of products has caused plants to close, because they are not able to continue their own production without the units made in electrical industry plants.

Stocks of slab zinc have steadily declined. The imports of ore from Mexico and Canada have decreased 30 percent. Exports of slab zinc dropped over 49 percent. They were shipped to Switzerland, Finland and Sweden.

Tin continues to be one of the most critical needs. The metal and concentrates available in the United States in 1946 are estimated at less than 42,000 long tons, or 35 percent below the absolute restricted requirements of the year, which is 65,000 tons. The deficit is made up by withdrawal of 2,000 tons monthly from the government stockpile, which in May had dropped below 65,000 tons. Tin required for government needs, added to deficit withdrawals, will exhaust the government stockpile in the spring of next year, if not earlier. Malaya, the chief producer of tin, normally exporting around 90,000 tons annually from its 91 mines, now is not expected to supply more than 3,000 tons for the present year. CPA hopes it may assemble from various sources at least 45,000 tons of tin for 1946. Tinplate mills, by government request, have been channeling 85 percent of their production to manufacturers of cans and closures used for the preservation of perishable foods, drugs, medicals, and biologicals. The other 15 percent was designed for toothpaste tubes, and similar uses. Exports were restricted to 112,000 short tons, although 21 foreign

(Continued on page 70)

LUMBER





Samples of each bale are classed to determine grade and staple length of the fibers.

For the first time in a decade, cotton is managing to get from under its burden of carryover and is preparing to meet increasingly formidable competition by more intensive research and overall efficiency and economy in distribution.

Cotton Faces a Battle Royal

By D. J. WITHERSPOON

Associate Editor

COTTON at long last is managing to get from beneath its heavy burden of carryover. But this fact in itself does not mean the dawn of a "bright new day" for cotton; it is still faced with many serious and disturbing problems. Cotton, leading representatives of the industry agree, must be "sold" on a scale never before attempted and overall distribution costs reduced radically if it is to meet increasingly formidable competition in raw-fibre and end-product markets. The liquidation of surpluses does mean, however, that the ending of the 1946-47 crop year will see the ledger's "production" and "carryover" columns balanced for the first time in a decade and a new page turned over for the recording of future events.

The current crop year began with a carryover of 11 million bales. The beginning, a few weeks hence, of a new crop year should

see this surplus reduced to less than 8 million bales and by the following year the industry should be safely within the 5 million bale figure at which surpluses generally are conceded to begin. Uncommitted government stocks are said to have been reduced from between 8 and 9 million bales to under 250,000 bales and the only cotton to be harvested between now and the beginning of 1947-48 year is the crop already in the ground. The maintenance of consumption on a scale sufficient to prevent the reaccumulation of surpluses is now the industry's biggest problem.

The attainment of this end, cotton spokesmen agree, involves: 1.

Scientific research to enable cotton to meet the quality challenge of its most progressive competitors. 2. A major selling job. 3. Reduction in overall distribution costs through simplification and standardization at points where one productive or distributive activity connects with another.

Cotton's needs are seen clearly. How adequately are they being met? The National Cotton Council of America, composed of elected representatives of each of the six branches of the industry, producers, ginner, merchants, spinners and cotton seed crushers, is well qualified to speak for the industry as a whole. According to Edward Lipcomb, in charge of sales promotion, inadequate funds have made the problem of cotton research difficult.

Seven years of research in the Council's laboratories and in the affiliated laboratories of the Mellon Institute have resulted in "the

definite and irrefutable conclusion that the one and only way in which the industry can attain a research program adequate to its needs is through public funds." The likelihood of public funds becoming available depends on the outcome of congressional hearings, currently going forward, on a cotton research bill, the passage of which would make approximately \$17 million a year available to the industry.

Progress, meanwhile, has been made in the few research projects that could be industry financed. These include, among others, the perfection of a vegetable oil which is shortly to be publicized as being more digestible than any animal fat; the development of new plastic laminates with fibre bonding and the use of cotton for purposes of insulation. The commercialization of this latter project, which was spearheaded by the National Council, is said to be increasing cotton consumption substantially.

For the first time in its history, the cotton industry is undertaking a selling job comparable to that of its competitors. Cotton's industrial markets are determined by its thousands of end-use products. In the automobile tire cord market, cotton must meet exacting specifications affecting quality. Price is of secondary consideration and sales effort, other than publicizing the results of current research, is said to be of practically small consequence. In the bag market, however, where paper, backed by intensive selling, is making serious inroads, price is all important and quality a minor consideration. A substantial part of this market responds to sales effort. In the women's dress market, selling based on price, style and quality is of primary importance.

Present industry plans, predicated on specific market requirements, include:

1. National advertising in magazines having a total circulation exceeding 150 million.

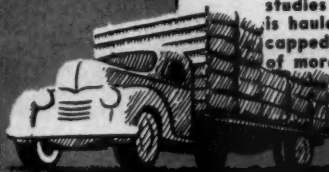
2. Nationwide advertising in street cars and buses carrying approximately 90 million passengers each month.

3. Dissemination of educational publicity to reach a million farm

(Continued on page 81)

Distribution Costs

Average cost of hauling seed cotton to gins can be cut by fuller loadings and by use of more direct routes. About 86 percent of the 1940 crop was hauled by growers, 8 percent by ginners as a service calculated to increase volume, and 6 percent by commercial truckers. Government studies indicate that two-thirds of the cotton crop is hauled by motor trucks which still are handicapped by tire shortages, emphasizing importance of more efficient use.



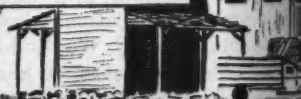
Increase volume of bales per gin. Government studies indicate that average costs per bale are substantially less for gins with annual volume of 500 or more bales. During the peak load of the 1939-41 seasons, more than half of the counties in nine principal cotton states used less than half of total ginning capacity on the basis of a 12-hour day. In about 15 percent of the counties, less than 30 percent of total capacity was utilized.

Substantial economies, amounting to one-quarter of present costs, with little or no delay in harvesting or ginning and with little or no increase in seed cotton storage requirements are believed possible through: a. Scrapping obsolete equipment and boosting volume of ginning per unit; b. Improved methods of picking and conditioning seed cotton for ginning; c. Modernization of ginning and auxiliary equipment and more efficient methods of organization and operation.



Cotton moving through marketing channels changes hands several times with much duplicate sampling and handling. This results in additional service charges; cotton wastage; damage to bagging; exposure of cotton to further waste and damage.

Costs of cotton receiving and related services, including sampling, weighing, tagging, and storage up to 30 days, government economists suggest, can be reduced through use of automatic samplers of a type already developed in conjunction with a reliable and permanent means of identifying samples with bales, and through elimination of unnecessary assembling and handling before mill shipment.



ts of Cotton Can Be Cut

Large stocks of cotton are held by compress companies and warehouses until needed by mills. The carryover in recent years has greatly exceeded annual production or consumption. Because of the difference in space requirements, about 17 percent of the compresses during the 1938-39 season averaged 17c per compressed bale as against 24c per uncompressed bale. Companies which do not provide differential rates usually compress incoming shipments or reserve the right to compress.

Execution of government recommendations would reduce storage and insurance charges by as much as 25 percent. Suggested reforms include: compression of cotton before storage; increase in length of continuous storage by avoidance of unnecessary changes; improved efficiency of related services such as receiving, sampling, tagging and compressing.

Compress companies render supplementary services, often including weighing, sampling, marketing, insuring, reconditioning and storing, all of which influence compression costs. Of the total compress industry revenue reported some time ago only 30 percent was derived from compression; 50 percent from storage and 20 percent from other services.

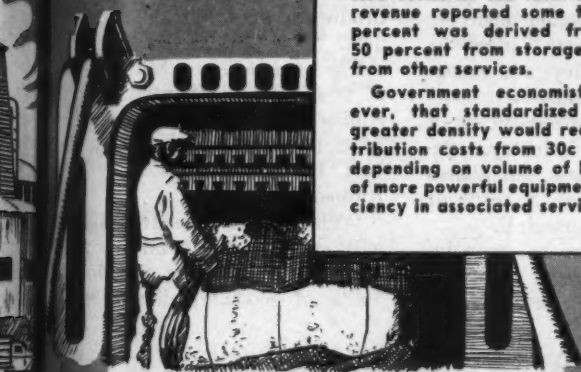
Government economists believe, however, that standardized compression to greater density would reduce cotton's distribution costs from 30c to 50c per bale, depending on volume of bales ginned; use of more powerful equipment; improved efficiency in associated services.

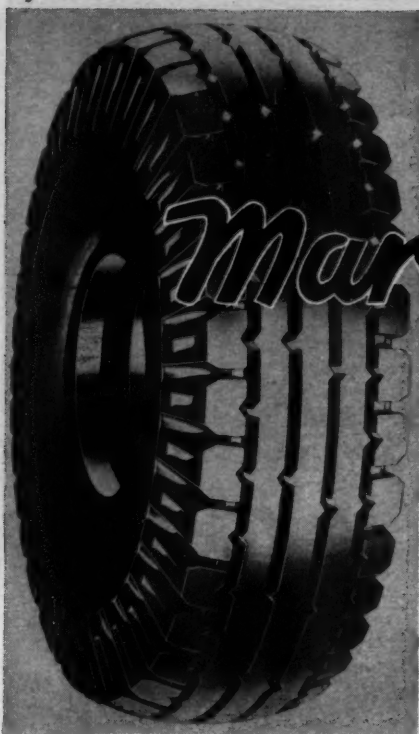
Interest charges for financing cotton holdings, government statistics show, range from 2 or 3 percent for the larger merchants to 6 percent or more for smaller merchants who obtain local financing. In recent years substantial stocks of cotton have been carried as collateral for Commodity Credit Corp. loans at about 3 percent interest. On the basis of an average rate of about 4 percent, interest charges averaged about 33.2c per bale per month during the 1943-44 season when farm prices averaged 19.88c per lb.

Government economists suggest that interest charges for the smaller and larger merchants can be equalized through increasing the volume of business through combinations; reducing and preventing excessive carryover; increasing marketing outlets.

Distribution costs, government experts believe, could be reduced and much needless duplication avoided if cotton were sold on description throughout the marketing system on the basis of a dependable classification.

Such a classification would require: setting up of official standards for quality or "character" to supplement present grade and staple standards; use of competent classifiers under conditions conducive to accuracy; means of identifying classification with classified bale; facilities for sample assembly, recording and making information available in time for use in selling.





Marketing Trends

By JOEL KEITH
Associate Editor

THE story of truck tire marketing is one of efficient management. Throughout the rubber industry, executives responsible for truck tire sales ascribe marketing efficiencies to the fact that overall distribution costs are under constant study. Economies have been effected in every phase of distribution by all of the leading truck tire producers. Cost records are maintained for such separate distributive factors as transportation, handling, ware-

housing and insurance because of two firm convictions on the part of rubber industry management:

1. Distribution costs cannot be controlled unless they are recognized and understood.

2. Marketing, especially in a highly competitive industry, cannot be effective unless the phases of distribution which precede it are efficient and economical.

Competition always has been intense in the rubber industry. From 1900 to 1930, according to

the Federal Trade Commission, over 95 percent of all companies engaged in tire manufacture disappeared; either because of failure, withdrawal from the tire field, or consolidation to form larger organizations. The leading tire manufacturers today also are the chief producers of other rubber products.

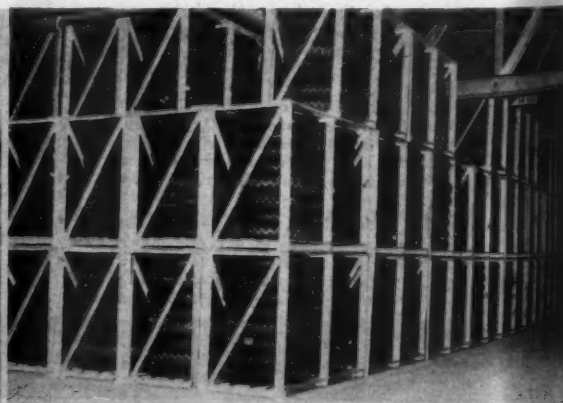
The comparative sales position of truck tires with relation to all rubber products can be determined from a recent statement by Herbert E. Smith, president, U. S. Rubber Co.

"The rubber industry this year will experience the largest peacetime production in its history. Value of goods which will be pro-

This Norfolk, Va. service station sells tires, gas, spare parts.



The army has developed methods of palletizing tires efficiently.



Truck Tires . . .

Research in the rubber industry is not restricted to the development of better products. It is concerned, in addition, with the more efficient and more economical distribution of products. In the truck tire field, this scientific approach has brought about effective methods of marketing which are based upon a sound understanding of all preceding distributive functions.

duced is estimated at \$1.75 billion, an increase of 87 percent over the comparable amount of \$940,000,000 in 1940, the previous largest peacetime production year.

"More than half of this record output will be accounted for by tires. Current trend of production indicates that between 85,000,000 and 90,000,000 tires will be made. Of this total, close to 70,000,000 will be for passenger cars, almost 14,000,000 for trucks and busses, 4,000,000 for farm tractors and implements, and the remainder for airplanes and for industrial use."

While this estimate indicates that five passenger car tires will be sold for every truck tire sold, it should be remembered that in

general, truck tires are far more expensive than passenger tires. In the opinion of another industry spokesman truck tires will represent about 35 percent of the total dollar value of all tires sold.

From the factory door, truck tires flow through two principal channels of distribution. Approximately 30 percent of production is sold as original equipment to manufacturers of motor vehicles. The remaining truck tire output, about 70 percent of the total, is absorbed by the replacement trade. These tires reach the users through various outlets and by various methods, which may be summarized in part as follows:

1. Manufacturer-controlled retail stores.
2. Independent dealer organizations.
3. Mail order houses.
4. Chain and department stores.
5. Oil companies. (Gasoline and service stations.)
6. Cooperative stores.
7. Direct sales to commercial and industrial users.
8. Direct sales to government agencies.
9. Direct sales to foreign users or export agents.

Three of the four largest truck tire producers sell tires for replacement purposes through company-owned stores. U. S. Rubber Co., which disposed of its last con-

Truck tire undergoes cleated wheel test.



Some Facts About

Industrial Tires

WARTIME developments in materials handling equipment have brought about a greatly increased demand for industrial tires. . . . The market for industrial tires is estimated to be between \$8,500,000 and \$10,000,000. . . . No closer estimate is available, because industrial trucks are not subject to registration rules covering highway vehicles.

Reliable sources, however, indicate that industrial truck usage has increased by about 200 percent since 1940.

Synthetic rubber tires are fairly satisfactory for industrial truck use. . . . The main drawback of synthetics is that they cause higher power consumption than natural rubber industrial tires.

Customer service is especially important in the industrial tire field. . . . The solid rubber type of tire must be pressed on to the wheel of the truck, and very few organizations outside of the tire field have the equipment necessary to perform this service.

trolled store prior to 1939, markets through independent dealers. Coordination between the company and the dealers in this case is achieved through a dealers' advisory council. This group consists of U. S. executives and of representatives of the independent dealers.

General Tire and Rubber Co. is an organization which believes in the value of marketing truck tires through individuals who own their businesses.

"These dealers," explains K. A. Dalsky, manager, truck tire sales, General Tire and Rubber Co., "are permanently interested in servicing their customers."

"All of our distributors, their salesmen, service men and other employees are, in effect, trained by the factory. Although the actual training may not be accomplished at the factory, the desired result is achieved through an extension of factory ideas and requirements to the dealer by means of our own personnel.

"Truck tire salesmen, for instance, are provided with all technical data available at the factory. Until the dealer's salesman has become proficient at understanding and solving problems relating to truck tires, a man from the General factory works with him."

Both General and U. S. custom-

arily deliver truck tires sold to large national accounts through local dealers. This procedure has been adopted to support the dealer and to insure adequate service for the account.

The factor of customer service is an important consideration in the sale of truck tires. Various types of servicing arrangements are in effect throughout the industry. One of the largest manufacturers, for example, offers a fleet service plan through its dealers which includes mounting, inflation, switching duals and alignment of wheels. The growth of the tire recapping business during the war has provided some dealers with an additional service function.

Here to Stay

Opinion within the Federal Trade Commission holds that recapping is here to stay. Army tests, reports this government source, have demonstrated that retreads give 80 percent of the service of new tires at about 40 percent of the cost. In addition, recapping saves approximately 40 percent in rubber consumption.

The synthetic rubber truck tire, another wartime development, may be discarded, at least for a time, according to some industry execu-

tives. At present, a considerable portion of each truck tire is constructed of natural rubber. When natural rubber returns in quantity, most manufacturers will use it for truck tires immediately. Because of the heat build-up caused by heavy vehicles, natural rubber has been found to give more satisfactory service than any synthetic rubber yet developed.

This does not mean that the synthetic truck tire, having served its purpose during the war, will be forgotten. "Rubber chemists have been working on natural crude for tires for more than 50 years and on synthetics for about four years," states a sales executive of a major tire producer. "If rubber manufacturers have faith in synthetics, and continue with research and experimentation, a combination of natural and synthetic rubber may prove most practical for the truck tire of the future."

One answer to the problem of heat build-up on the highways is rayon cord, which already has supplanted cotton in the construction of truck tires. Experiments are being conducted to find still more satisfactory materials, and it is possible that in the future, one of these will supplant rayon in tire manufacture.

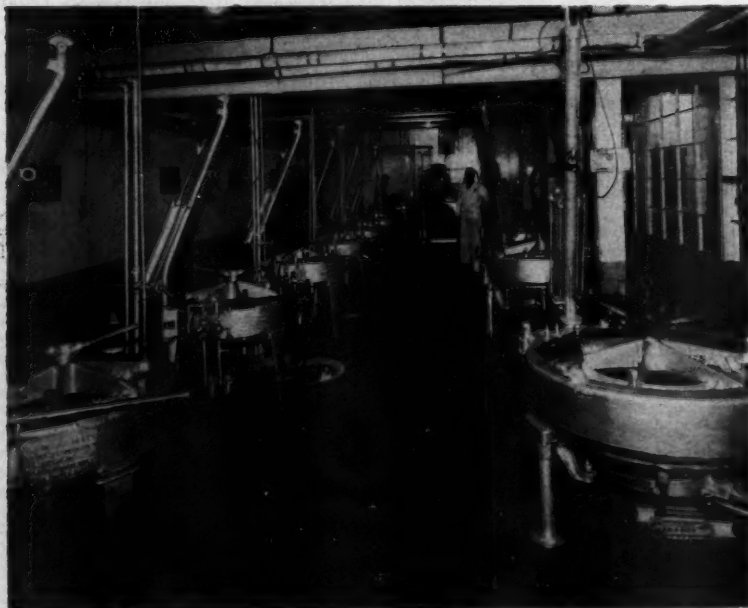
The rubber industry's program of experimentation will permit "truck tires to keep pace with truck motors," in the opinion of one tire development scientist, who points out that the motor truck of the future will demand improved tires. An increase in truck speed means less mileage per tire. However, mileage records are expected to remain constant for some time despite increased speeds, because of improvements in truck tire technology.

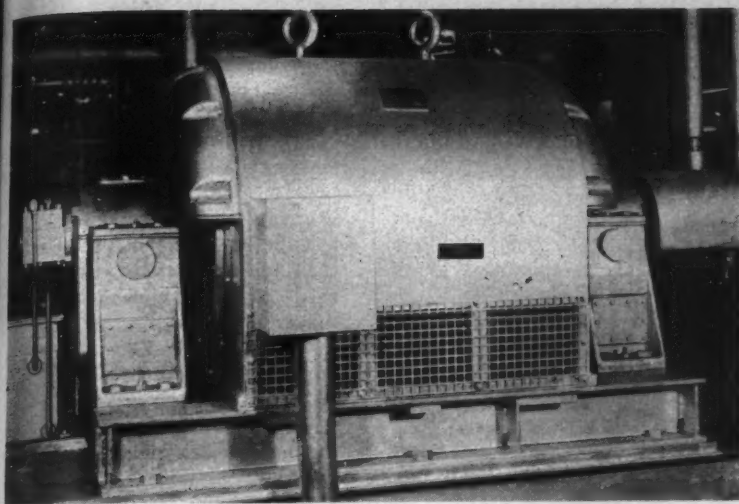
Research in the rubber industry is not restricted to the development of better products. It is concerned, in addition, with the more efficient and more economical distribution of products. The industry agreed, some time ago, that an outer paper wrapping on truck tires constituted a needless distribution expense. This wrapping has been eliminated.

At present, many companies are experimenting with the palletization of truck tires. During the war, the army demonstrated that

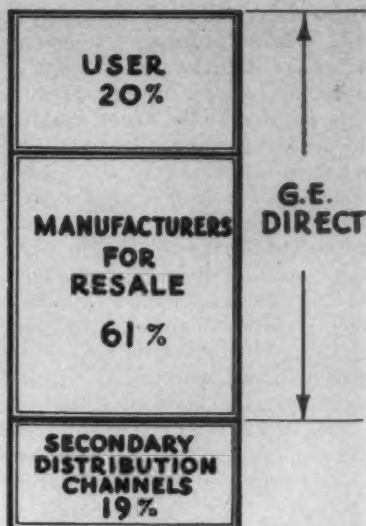
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Recapping is here to stay, according to opinion within the Federal Trade Commission.





Three broad channels are used by most motor manufacturers in marketing their products: direct sales to large users, indirect sales to small users, and, to a limited extent, smaller size motors are sold under contract agreements to national distributors.



PRINCIPAL TYPES OF G.E. MOTOR BUYERS

Marketing and Servicing Electrical Motors

THE marketing and servicing of heavy electrical apparatus is best typified perhaps by electric motors, because practically all channels of distribution are utilized, and because motors are used in a great variety of places, in industry, in utilities, on farms, and in homes. Indeed, it is the many varieties, the many distribution outlets, and the wide usage of motors which give complexity to the problem of distribution and service.

Three broad channels are used by General Electric and most motor manufacturers in marketing their products. First, they sell directly to large users, to machinery builders, and, to a lesser extent, to other resellers such as contractors, dealers, and manufacturers' agents. Secondly, they sell indirectly to small users and machinery builders, contractors, elec-

By O. F. VEA

Motor Division
General Electric Co.
Schenectady, N. Y.

trical dealers, farms and so forth through authorized agents such as General Electric Supply Corp., Graybar Electric Co. and Apparatus agents. Thirdly, to a limited extent, and in the smaller sizes only, they sell under contract agreements to national distributors. A clear distinction is made between an agent who sells for and on behalf of the manufacturer, the only sale being the sale by the agent, and the distributor who buys the product and resells it.

More than 90 percent of the GE motor business by dollar volume comes from about 5000 purchasers; yet motors are bought by more

than 205,000 customers. Thus, distribution service to the many small purchasers is given most satisfactorily through resellers of all kinds including machinery builders where the sale of motors is made as a part of other equipment sales.

A typical dollar volume pattern of sales distribution by classes of purchaser is shown in Chart 1. It illustrates a well-known fact that machinery builders play an important part in the distribution of motors. Particularly is this so in the smaller sizes of motors. The relationship between machine sales and motor sales is very close. In most instances, the one product enhances the value of the other when they are sold together.

Electric motors properly applied and mounted on machines make the machines more efficient and productive and are a convenience to the ultimate user. At the same

time, the skilled engineering talent and manufacturing technique which go into the manufacture of a machine give a specific productive purpose to the motor, making its purchase more attractive. In addition, because the motor becomes a part of the machine and loses its identity as a motor, the motor is sold through the distribution channels and the sales effort of the machinery builder. Thus, motor distribution to many purchasers not normally directly contacted by the motor builder or his sales agents is accomplished.

Because of this, it would seem just that machinery builders should obtain dollar increases from

the ultimate purchaser for the motor portion of their machines, for the additional expense of sales and application, and for the extra value obtained by the combination. This dollar difference could be recognized, and is at present, by the motor manufacturers by a discount spread over other purchasers of motors; or it could be obtained by an addition to the machine price to equal the purchaser savings from not having to buy, apply and install the motor separately, and for the value of unit-responsibility which the purchaser gains.

General Electric sells motors directly in 10 districts and from

offices in 106 cities by college trained and factory conditioned sales engineers. Certain of these district men also supervise sales to agency sellers and distributors resellers. Application, production and maintenance service, plus emphasis on the reliability, convenience, and operational savings, are the sales methods used rather than any merchandising techniques used in selling consumers' goods. Advertising is done primarily in the trade press, in horizontal papers and industry papers to build up preference for the equipment and thus to aid resellers; and in the design papers to aid the machinery builder in selecting the most economical and the best equipment for his machine.

The bugaboo of any distribution system is excessive variety. The motor manufacturer is confronted by a distressingly large number of kinds, types, ratings, and styles of motors and generators. This variety is compounded by the great number of ratings from one horsepower to 15,000 hp or larger in industrial sizes alone; and then is compounded again by the different kinds of motors: direct-current, single-phase, polyphase, synchronous, gear motors generators, etc. There are hundreds of thousands of active models.

Luckily the motor industry through NEMA has been at work aggressively on industry standardization since 1908. Standardized lines of motors have been established and have won widespread acceptance throughout the industry. The infinite variables of motor ratings and characteristics and dimensions have been stabilized into regularly spaced steps or preferential series. In addition, minimum values of quality have been established for the purchasers' protection and to eliminate sub-standard varieties. A 176-page book of NEMA motor and generator standards defines these standard lines and values.

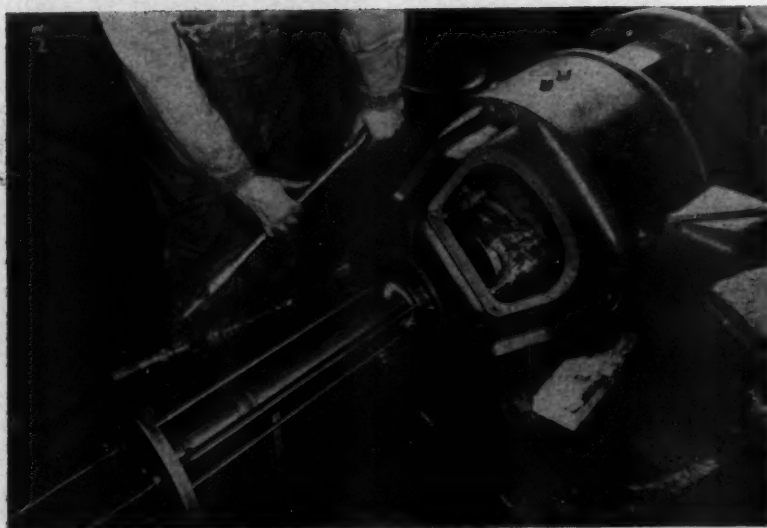
As a result, a market exists which makes possible to a degree mass production, warehouse stocking, and a system of servicing. The purchaser gets interchangeability, prompter delivery, better repair and renewal part service.

(Continued on page 86)



Left: Motor brushes must be checked to see whether they ride free in their holders.

Below: D-C motor with ball bearing is pulled from end shield with hydraulic jack.



By A. F. STUEBING

Assistant to Manager of Sales
High Strength Steel Division
Carnegie-Illinois Steel Corp.



Freight Cars For Economical Distribution

THE only profitable part of freight operation is hauling revenue payload; moving dead weight is merely a source of expense that should be kept to the minimum in all classes of trains. The early analysts of railroad operation stressed the desirability of heavy tonnage in freight trains. In the last 20 years, more emphasis has been placed on gross ton miles per train hour. Both of these standards are oversimplified, because they do not take account of the relation between dead weight and lading. This relationship between dead weight and lading is the key to operating efficiency.

A short review of operating conditions will help to show the problems involved. In 1920, the average freight train on Class I railroads had a total weight of 1,443 tons excluding locomotive and tender, and consisted of 35.6 freight carrying cars. The weight

During the war years, the railroads demonstrated their ability to operate efficiently and profitably with a large volume of traffic. The trend now is toward more normal conditions. If the railroads are to make lasting improvements in the efficiency and profitability of freight train operation, they must resort to measures that will be effective when traffic falls off.

of the train was made up of 650 tons of revenue load, 58 tons of nonrevenue load, a total of 708 tons of lading, plus 735 tons representing the weight of the cars themselves. The ratio of dead weight of cars to the combined weight of revenue and nonrevenue load was 104.4 percent.

In the next 20 years, train tonnage increased almost continuously and in 1940 the total train behind

the tender weighed 2,047 tons and contained 49.7 cars. The total weight consisted of 781 tons of revenue load, 68 tons of nonrevenue load, or 849 total tons of lading, and 1,198 tons weight of the cars themselves. The ratio of dead weight to lading had increased to 141.1 percent.

The unprecedented volume of traffic during the war resulted in new records for train tonnage. In 1944 the average freight train weighed 2,409 tons and contained 53 cars. The revenue load was 1,068 tons, an increase of 37 per-

This is part of a paper presented recently before the Railway Club, Pittsburgh, Pa.

cent in only four years. The non-revenue load was 70 tons, the total lading 1,138 tons, and the ratio of dead weight to load 111.7 percent. Changes in the weight of lading and dead weight in freight trains are illustrated by Fig. 1.

When evaluating the statistics of freight service prior to and during the war, special allowance must be made for the unusual conditions since 1941 and especially the regulations of the Office of Defense Transportation. For example,

rules were established which increased the minimum tonnage for less carload cars, and this reduced merchandise l.c.l. loading from 8,039,515 cars in 1941 to 5,536,792 cars in 1942. Similar insistence on heavy loading of carload freight increased the net tons per loaded car from 27.6 in 1940 to 32.7 in 1944, or 18 percent in only four years. During the same period, the ratio of empty to loaded car mileage was reduced from 61.8 to 52.0 and the average haul of freight, considering the railroads as one system, was extended from 351 miles in 1940 to 478 miles in 1944. These changes, of course, were largely responsible for the decrease in the ratio of dead weight to payload in freight trains.

Railroad officers are pleased to see the proportion of net ton miles in freight trains increase, but the improvement from 1940 to 1944 resulted from abnormal operation and is not an indication of a permanent situation. The temporary effect of heavy carloading and other conditions due to the war is being eliminated gradually, and it seems reasonable to expect that within a few years freight train operation will revert to train loads and ratios of dead weight to lading much closer to those which existed in 1940. Consequently, if the railroads are to make lasting improvements in the efficiency and profitability of freight train operation, they must resort to measures that will be effective when traffic falls off, such as reduction in the weight of freight cars.

One of the noteworthy changes made in freight equipment during the past 25 years to decrease car mileage and the number of freight cars required has been the increase of average car capacity from 42.4 tons in 1920 to 50.0 tons in 1940 and 50.8 tons in 1944. As car capacity increases, the ratio of dead weight to maximum permissible lading generally decreases. Surprising though it is, the average load of carload freight not only failed to keep pace with the increase of capacity in the 20 years prior to the war but decreased from 29.3 tons in 1920 to 27.6 tons in 1940. The percent of capacity actually utilized decreased from 69.1 to 55.2.

(Continued on page 72)



FIG. 1 - LADING AND DEADWEIGHT IN FREIGHT TRAINS

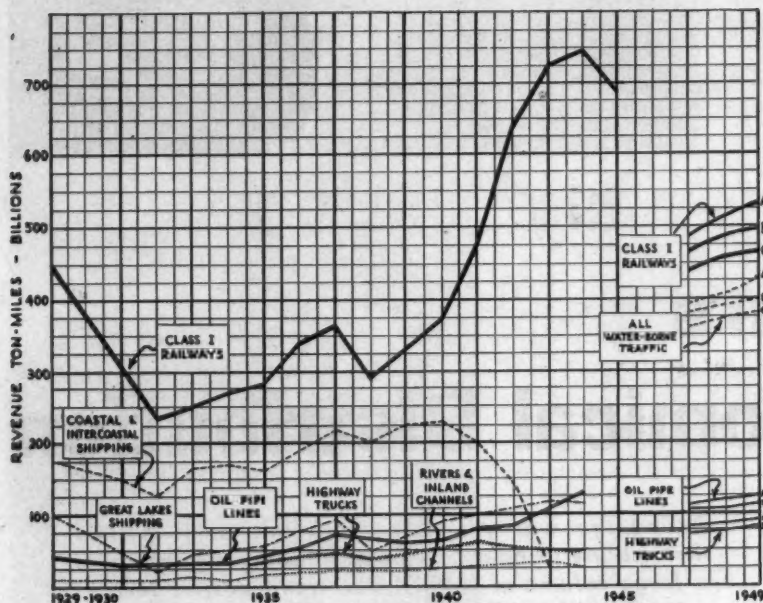


FIG. 2 - TON-MILES OF FREIGHT WITH POST-WAR ESTIMATES

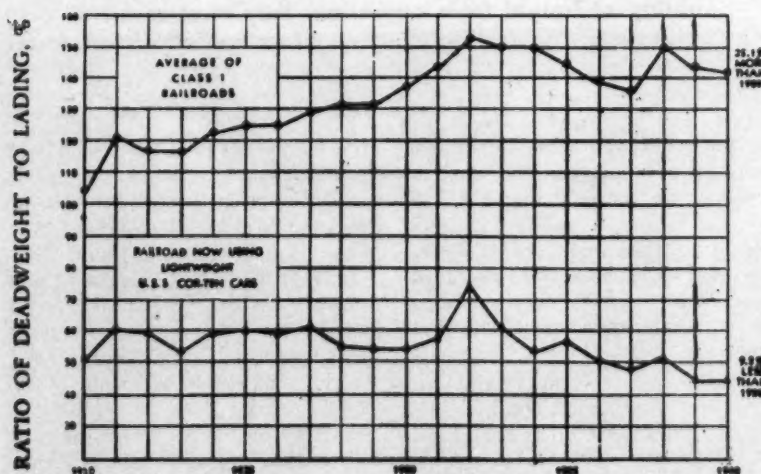
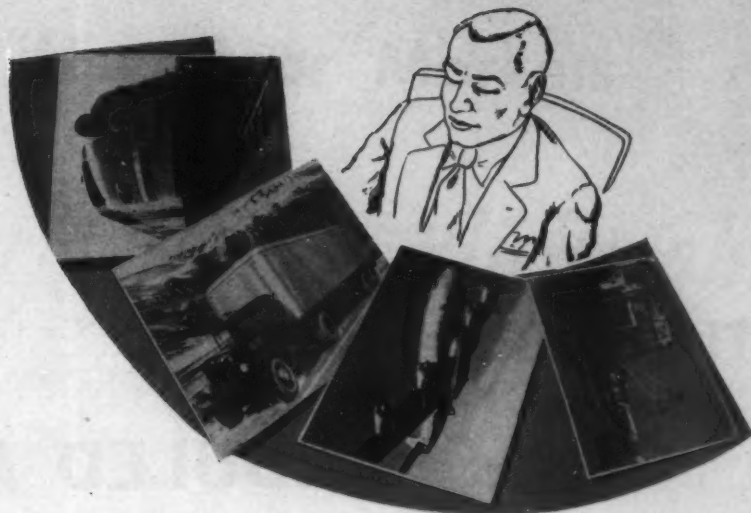


FIG. 3 - EFFECT OF LIGHTWEIGHT CARS ON DEADWEIGHT RATIO



There hardly is any limit to the number of illustrations which can be cited to demonstrate the importance of traffic management in facilitating the marketing of industrial products.

Traffic and Sales

By HENRY G. ELWELL

Traffic Consultant

AT a transportation cost of more than 50 times its value, a small quantity of commercial glue was shipped by airplane to Alaska from a factory located in the eastern section of the United States. The consignee, a fish-packing cannery in Alaska, nearing the end of the season with winter storms and ice in the offing, discovered that it was running out of the glue used to seal its shipping cases. These containers had to be sealed while moving along the production line. The time element was paramount.

The Alaskan firm sent a frantic request to the glue manufacturer's sales department. That department called upon its traffic department to arrange to forward the product in the quickest possible time without regard to expense. Under the circumstances there was but one form of transportation to consider. It was the selection of a specific airway carrier, and effecting rapid transfer to that carrier, which made the problem a difficult one. However, the traffic department succeeded with the necessary arrangements, which resulted in the glue being turned over to the Alaskan company in ample time to save the situation. Traffic

management accomplished quick delivery of a shipment to a customer in need.

This case may be unusual. But it illustrates one way by which traffic management can facilitate the marketing of industrial products. Moving the glue from the eastern area of the United States to Alaska by airplane is transportation; satisfying the requirements of the customer is the essence of marketing. The traffic department supported the sales department in a phase of marketing by securing transportation fitted to the need.

Movement and Cost

Adequate transportation includes not only the movement, but also the cost. It is one of the functions of traffic management to procure the most efficient service coupled with a reasonable charge. A "reasonable charge" for transportation may be high compared with the value of the product as in the case of the

shipment of glue. But, if the need is met, then the cost is of minor importance in an exigency such as confronted the Alaskan cannery. Nevertheless, cost of transportation must be based on a direct relationship with the general service furnished, and it is the obligation of the traffic department of a company to select the agency observing this prerequisite. Also, if the cost of over-all distribution is to be reduced then emergencies requiring expensive movements of goods should be eliminated. After all, marketing, as conducted today, would soon cease if the transportation charge on a large portion of the consignments amounted to 50 times the value of the product.

From the viewpoint of traffic management, marketing is that sector of distribution which appertains to buying and selling. Marketing is of vital interest to the traffic department, because of transportation factors involved. It should be noted that any marketing mission is not completed until the buyer (consignee) receives the goods from the seller (shipper). Within this sphere of operations the traffic department's assistance can be invaluable.

(Continued on page 90)

The CAB Decision on

NON-SCHEDULED AIRLINES

Under the present Board ruling, the only field open to an uncertificated operator is the hauling of cargo on contract. However, the determination of whether an airline is a contract, rather than a common carrier may prove to be an intricate problem.



By JOHN H. FREDERICK

Air Cargo Consultant

BY a recent sweeping decision, the Civil Aeronautics Board has dealt a blow to the hundreds of so-called "non-scheduled" air cargo carriers which have sprung up since the close of the war. It will be necessary for all such operators, except those doing nothing but contract carriage, to obtain a certificate of convenience and necessity before they can start to fly cargo.

The Board has made a strong declaration of policy. It has been made very plain that the airlines, possessing certificates of convenience and necessity issued under the Civil Aeronautics Act of 1938 and to whom mail payments have been made over all these years, (often on a subsidy basis) are not to be made a prey to "itinerant truckers" of the air. This follows airline opinion which maintains that the carriage of air cargo should not be regarded as a separate type of operation, and that the Civil Aeronautics Act of 1938 sought to protect the interests of the existing airlines. Airlines also held that in following the mandates of this act, the CAB hardly could duplicate the existing air transport system with separate air

cargo systems, and that public convenience and necessity seldom would demand such duplications.

It is not surprising that the Board took this step. Present airlines cover the major portions of the country, and the feeder airlines now being authorized to carry mail, passengers and cargo will blanket the remaining areas. There is, and will continue to be, competitive service between all large cities. The Board regards the airlines now in existence or hereafter to be authorized to carry mail, passengers and property as the logical carriers of air cargo. Such lines, it has been demonstrated, can develop cargo operations at less cost. Therefore, it will not be in the interest of the public, the shippers and receivers of air cargo, or the airline system of the United States to set up duplicate services, except on a very strong showing of convenience and necessity.

The "non-scheduled exemption order" which has been in effect for some years provides that an operation "shall be deemed to be non-scheduled if the carrier does not hold out to the public expressly or by a course of conduct

that it operates one or more aircraft between any designated points regularly or with a reasonable degree of regularity." There had been some uncertainty as to the meaning of these words.

In the order of June 5, the Board explains the confusing terminology as follows:

"To fall outside the meaning of 'regularly,' a service must be so characterized by variations as to be free from the suggestion of a normal, customary and common course of conduct. Recurring operations which assume the nature of a pattern are, of course, regular, even though the practice of staggering such operations has been adopted. But the non-scheduled exemption order also contains the phrase 'reasonable degree of regularity' and this imposes an even more stringent requirement as to the isolation of such operations of characteristics which would identify them with a pattern of consistency or uniformity. It is not enough to show merely that there is not a consistent course of conduct for there must not even be a moderately consistent course of conduct. A more than ordinary

(Continued on page 68)

Now, "Next-Door" Markets

via

American Airlines Airfreight



LOS ANGELES



NEW YORK

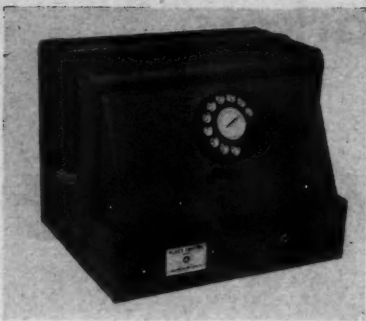


UTILIZING the speed, dependability and regularity of American Airlines Airfreight, hundreds of shippers are finding a new way to expand markets, gain new sources of supply and step up service to distributors, dealers and the public. By Airfreight, goods of infinite variety—including shoes, apparel, spare parts, baby chicks, jewelry—get to market faster. California melons reach tables in the East *days fresher* than formerly.

Overnight from coast-to-coast, mere hours for shorter distances—American Airlines Airfreight delivers pounds or planeloads at new reduced rates that make this service more economical than ever.

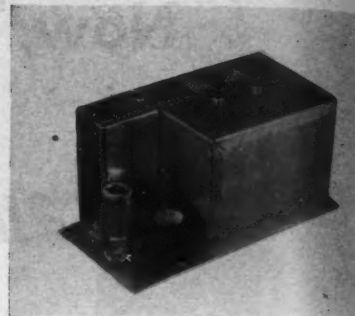
Where speed is your need, an American Airlines Airfreight expert can help you. Call your nearest American Airlines office for full information.

AMERICAN AIRLINES



Left: Using standard telephone dial, the operator of a central radio station can speak with individual receiving stations.

Right: A radio dial telephone receiving attachment is a simple device which operates by means of a pulsing audio tone.



Fleet Control By Radio 'Phone

Recently perfected attachment converts any standard two-way radio system into a selective radio dial telephone system, increases its flexibility and eliminates the "broadcasting" of company business to employees not directly concerned.

THE remarkable progress now being made in the adaptation of two-way radio to industrial uses is ushering in a new era in the field of electronic communications. One of the most striking evidences of this fact is the widespread acceptance by industry of radio's new role in transportation, namely, that of affording an efficient and economical means of management control of air, highway, rail and water carriers. A recent development directly affecting the future of two-way radio is the perfection of a compact, simple auxiliary means of converting any two-way radio system, whether of the AM (amplitude modulation) or FM (frequency modulation) induction, or guided carrier type, into a radio dial telephone system to enable selective communication between individual units or, if desired, among groups of units in a carrier fleet. The importance of this achievement, long a goal of radio technicians, lies in the fact that it obviates the necessity of "broadcasting" company business to employees not directly concerned.

This new radio dial telephone attachment was perfected in the re-

By D. J. WITHERSPOON

Associate Editor

search laboratories of The Hammarlund Mfg. Co., Inc., New York. Designed primarily for the control of carrier fleets and known as "Fleet-Control," the device has innumerable applications in many diverse fields, including terminal loading and unloading operations, interoffice and interplant communications, mobile police control, military communications, and many other uses.

Specific Units

An operator in a central radio station equipped with the new radio dial telephone attachment can dial by means of four-digit call number all, any group, or any one of 84 mobile fixed or portable receiving stations equipped with reception units. Using a five-digit, call, the number of receiving stations can be increased to 126. For special applications, a modified central station unit of the type illustrated is said to be capable of contacting selectively any one, or

any group, of 80,000 receiving stations. Messages intended for specific units cannot be overheard by unwanted stations nor can receiving station operators "break in" or converse with other receiving stations.

Fundamentally, the new radio dial telephone system utilizes the principle of audio tone modulation of a radio frequency carrier. The audio tone, which has a frequency of 6KC, or lower is pulsed by means of a standard dial telephone. Positive pulsing is used; hence, the dialing of a digit will cause a like number of audio pulses to be transmitted over the carrier. At the receiving end, the operation of a relay energizes a stepping switch and causes it to "notch up" the number of pulses transmitted. If the stepping switch advances to a contact point agreeing with the first coded digit it will remain in that position to receive the pulses caused by dialing the second code number digit. The dialing of the receiving unit's four-digit call will cause a succession of stepping operations and advance the rotary arm of the switch to contact 10, thus enabling the receipt of a message. During the dialing process, unwanted receiving units will undergo similar stepping operations but in each case one or more of the digits dialed will cause a rejection causing the stepping switch to re-

(Continued on page 69)



"It's a Studebaker truck...it's a pretty safe bet a smart man runs that business!"

THAT Studebaker Coupe Express Pick-up you see in the picture above is a full-fledged team-mate of 197,661 Studebaker military trucks that wrote brilliant new pages of transport history at the fighting fronts.

It's smaller in size and in load capacity, of course. But it has the same kind of stand-up stamina as Studebaker's big, powerful army trucks.

This means it makes few trips to the repair shop throughout its long life, thanks to a combination of top quality materials and painstaking craftsmanship.

Makes upkeep hit the downgrade! Informed truck operators, who use hard, cold facts as their buying gauge, know there's nothing to match the gas-saving and tire-saving record of Studebaker trucks.

Those savings are a logical result of advanced principles of de-

sign developed and perfected by Studebaker's truck engineers in their great scientific laboratories and on Studebaker's unique, 800-acre, million-dollar proving ground.

It isn't possible just yet to meet all demands for this good-looking, restful-riding half-ton Coupe Express. But Studebaker's truck manufacturing facilities have been greatly expanded. And the time is coming when a full supply of Studebaker half-ton, one-ton and still larger models will be available.

Don't settle for anything less than Studebaker quality and economy. Make arrangements now with a nearby Studebaker dealer to give your new truck needs his special attention.

STUDEBAKER

South Bend 27, Indiana, U.S.A.

BUILDER OF TRUCKS YOU CAN TRUST



Studebaker's full line of top value trucks in all sizes includes this big, husky M-16 model, available as cab and chassis for standard stake or special bodies. It's powered by the highly efficient 6-cylinder Hy-Mileage Studebaker engine. Also in production now is a versatile one-ton Studebaker Pick-up.

Editor's Note: This is the first of a series of four articles on the reorganization of a fleet service garage. The articles are based on actual experience although the name and address of the company involved are withheld for obvious reasons. We can attest to the facts. Because the information contained in these articles is of such practical value, we present it herewith in this form.

Fleet Service G

Part 1

How to Reorganize for Efficiency and Economy

By HENRY LEWIS

Special Correspondent

SUPPOSE you were in the transportation business and had a fleet of trucks, tractors and trailers. Your business had grown fast—too fast to be organized as it should be. More than a hundred units of equipment must be kept running, for income rolls in only when trucks roll on.

Your service garage is the first place to organize. If equipment is not repaired and maintained it cannot run. If the service garage is not efficient, you are paying too much for maintenance and repairs.

Now suppose you have grown so fast that your garage looks like

a country crossroads blacksmith shop. It is dirty and ill-lighted. The tools and machinery are old, in bad condition and short of necessary items. There are piles of this and that in the corners and along the walls.

Your stockroom is worse. The parts and supplies bins are a collection of odd pieces you have built or picked up from time to time. Bolts, screws, rivets, cotter pins, washers and a host of other small

items have been mixed together in the drawers where they are supposed to belong and have overflowed in open, broken boxes on the floor. Motor parts have been put away in any open place. The same numbered part may be found in a half dozen different places.

Of course this couldn't be true! But it was true of one transportation company and one George Williams, an experienced analyst and systemizer with the company, was given the job of creating, without the construction of a new plant, a modern, efficient and smooth running service department. This

Truck washing at Anchor Motor Freight Co. garage, Linden, N. J. Mechanics service motor at Dairylea garage, Middletown, N. Y.



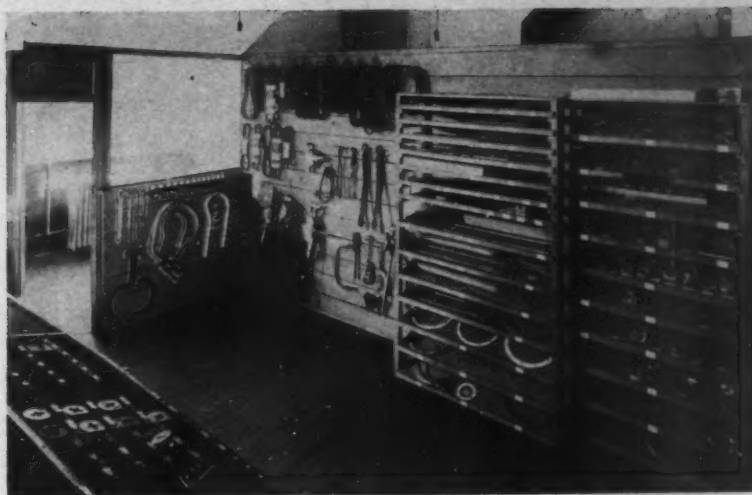
ce Garage

story tells what was done and why and how.

As a preliminary, a complete set of sectional, knocked-down bins was ordered from a layout furnished by a well known manufacturer. Wood bins were used, steel bins not being available at the time. They arrived in due time and then began a three months job of hard work, dirty and greasy and tedious work. It required patience, careful thought and sometimes pure inventiveness.

A smooth working fleet garage was not created simply by providing a reasonably convenient building, good machinery and well made bins and racks. These had to be arranged even down to small details so that, if possible, every minute of lost time might be eliminated. The aim was to provide not only a plant but a system. The plant, machinery and bins could be purchased from catalog and layout. The system was worked out by study, inquiry, creativeness and the patience to delve into catalogs and records; to find numbers and descriptions; to check duplications and substitutions; to provide all the information needed with the utmost in simplicity.

The first obstacle George Williams faced was one he had expected. Some people are so set in their ways that they oppose any change, no matter how bad conditions may be. "This must be left as it is. That cannot be done." Their favorite argument is one that seems unassailable, "I have been here right along. You haven't. If you had been here as I have, you would understand why that must stay where it is." They claim some mysterious or technical knowledge that only years of familiarity



This stockroom, adjoining office, contained a gasket rack of new and convenient design.

will bring. Usually such men have no mental vision; no imagination. Sometimes they are only trying to emphasize their own importance.

The fact is that in most cases so-called technical knowledge is only commonsense or analytical thought applied to certain conditions. Given a knowledge of those conditions, it requires no super-thinker to understand and solve technical problems. Any "trouble shooter" who works on a variety of jobs understands this and acts upon it.

Self Confidence

The ability to organize demands courage, thinking ability, and self confidence. It requires also the authority to override constitutional objectors, for it must be done. At the same time, care must be taken that legitimate objections are not overruled.

After consultation, Williams had ordered the stockroom cleared entirely, except for one set of bins which could be used. He ordered a small lathe taken out to the machine shop. At once the office man objected. "We can't throw away those two cabinets. We need one for rivets and pump parts and the other for carburetor and electrical parts. And that lathe must stay in the stockroom. If we don't keep it here, inexperienced men will monkey with it and spoil it."

The same thing happened when

Williams planned to cut a door from the stockroom to the office, so the stockroom entrance which was through the drivers' room could be closed up. "We can't do that. I have a lot of things in the office that are private. The more doors we have, the harder it is to keep people out."

When questioned, the office man admitted that he kept the street door to his office locked at all times. Visitors were compelled to come through the garage and the drivers' room to get into the office. George explained that he wanted only two doors to the stockroom, one leading directly to the shop and the other to the office. The street door to the office would then be unlocked and used.

"For the good of all," Williams said, "we want to separate the stockroom from the drivers' room. Mechanics only will have occasion to come into the stockroom. And by using the street entrance to the office, visitors will be kept out of the stockroom or shop unless they are permitted there. Salesmen, in their zeal to sell goods, can waste a lot of time of the foreman or the mechanics or the stockroom man. You, in the office, can stop them there unless it is advisable to let them go through."

The matter was dropped and is mentioned here only to illustrate how big objections will be raised over very little things. As the

(Continued on page 48)



Selling Handling Equipment Requires Special Knowledge

THE sale of materials handling equipment is attracting many new organizations and individuals, because of the current demand for this equipment. Much of this demand has developed as a result of the experience in working out handling and storage problems by the armed services during the war.

Few of the new organizations entering the materials handling equipment field have a personnel with sufficient background to do the job that needs to be done. The result may be a misapplication of materials handling equipment.

By **MATTHEW W. POTTS**

Materials Handling Consultant

This might have a detrimental effect on the industry as a whole.

While the application of materials handling equipment largely is a matter of commonsense, rather than engineering, nevertheless, this commonsense requires considerable experience and a knowledge of many factors that must be considered if a handling problem

is to be analyzed so as to arrive at a satisfactory solution.

The writer, in his capacity as a consultant, sales executive, and author and lecturer on the subject of handling, has had many personal experiences with the design, sale and installation of materials handling equipment in many types of industry, and has learned by experience that it is necessary to take into account all possible contingencies before making definite recommendations.

One example was the installation of straddle trucks and fork trucks for the handling of lumber from the green chain pits of the sawmill out to the storage yard for air drying, and the reclaiming of these stacks of lumber, transporting them over the highway to the mill site where they were to be kiln dried, resawed, and worked into square edge lumber and finished products. In working out the details of the operations, the savings which could be effected justified an expenditure of approximately \$25,000 for equipment, but it was necessary to accomplish this savings in two to three years, because of the possible relocation of the sawmill.

The project was approved, the physical layout surveyed and the

(Continued on page 76)

MARKETING industrial handling equipment calls for experience, special knowledge and commonsense. It is necessary for sales engineers to take into account all possible contingencies before making definite recommendations.

Frequently, savings that can be made by increased production, because of better handling methods, will justify the total overall expenditure for materials handling equipment and building changes, but unless this is developed by competent engineers, costly and unnecessary mistakes can be made.

There are many instances when misapplication of equipment is brought about by a lack of knowledge on the part of management as well as of equipment salesmen.

There is a lack of appreciation on the part of engineers and architects regarding the necessity of working out coordinated production and materials handling systems before designing the buildings which are to house them.

The cost of a building is an initial cost and occurs once, but the mistakes made in building design which require excessive handling, and which reduce the productive efficiency of space, continue year after year and are a constant expense.



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Philadelphia 32

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Problems In Petroleum Marketing

Postwar difficulties in the petroleum industry have created a healthy dissatisfaction with the state of affairs, and a hearty desire among filling station operators to overcome the handicaps and get on with the business of supplying the greatest civilian petroleum demand in history.

ALTHOUGH a year has elapsed since V-J Day, and the end of gasoline rationing, the petroleum marketer has not yet achieved that blessed happiness which appeared so certain in the postwar era. No American business was more radically affected by the war than the distribution of petroleum products. The emergency, even before formal entrance of the United States into the war, had seen unprecedented petroleum demands force rationing in the 17 Atlantic seaboard states. Loan of tankers to Great Britain had choked off the normal pattern of water transportation to the east coast states. With our formal en-

By JOSEPH E. KELLER

Attorney
National Petroleum Assn.
Washington, D. C.

try into the war, gasoline rationing became nationwide, and the ban on all pleasure driving soon followed. Quality of petroleum

In addition to his affiliation with the National Petroleum Assn., Mr. Keller is attorney for Pennsylvania Grade Crude Oil Assn. and a member of the law firm of Dow, Holmes and Albertson. During the war, he served as a major in the transportation corps, and acted as advisor to Joseph B. Eastman and Col. J. Munroe Johnson in the Office of Defense Transportation.

products was lowered, filling station attendants were drawn into the armed services in unprecedented numbers. Scarcity of tires further limited driving. The petroleum marketer was hit hard by the war.

Patriotically, if not cheerfully, the petroleum marketer accepted these burdens as an inescapable incident of total war. He stayed at the job, despite the handicaps, doing his best to supply the needs of war workers and users found essential to maintain our civilian economy. The petroleum industry generally went all out for victory, doing what has been acknowledged

(Continued on page 87)

More than 1,000 types and grades of lubricants are specifically made for specific purposes. The oil that lubricates an automatic lathe is not the same oil that lubricates textile machinery. If the right oils do not reach the right place at the right time, plants must shut down. Without lubricants, our whole distribution system would cease to function.

Industrial Lubricants

MARKETING lubricating oils and greases for industrial use is a highly specialized profession, and one of the most competitive branches of the petroleum industry.

There are more than a thousand types and grades of lubricants, each tailor-made for specific purposes. The oil that lubricates an automatic lathe is not the same oil that lubricates textile machinery. The oil that's ideal for use in a steel mill might not be practical in other metal-working plants, and so on, through scores of industries and hundreds of different types of machinery. There is as much difference in quality and price of various lubricants as in the suits

By B. G. SYMON

Manager of Marketing
Lubricants Division
Shell Oil Co., Inc., New York

of clothing you would buy at New York's finest custom tailor and at a second-hand shop on the Bowery.

With such a vast array of products in a single field, a company must back up its research and manufacturing know-how with top-notch marketing efficiency if it is to hold its own in competition.

For this reason, most salesmen of industrial lubricants not only are engineers, but are required also

to take an extensive training course before they actually start selling. They must understand how different types of machinery operate under varying climatic and other conditions; which type of lubricant is best for specific types of machinery, and why; the source and refining processes of various lubricating oils; their various chemical and physical properties, such as viscosity, pour point, gravity, flash point and fire point.

The industrial lube oil sales engineer should be able to enter plants where there are several hundred different pieces of mechanical equipment, each class of which has different needs, and prescribe the lubricating requirements

Right: Workmen brush bench lathe gears with a Shell rust preventive oil which was developed to coat intricate precision machinery for storage. Below: Drums of lubricating oil can be handled best with modern equipment. Fork trucks load drums of lubricants bound for industrial users.



of each machine. He should be able to save the plant-owner money on lubricating costs and, at the same time, increase the life of the equipment and improve the service it provides, whether it is a large ice machine in a brewery, a compressor for manufacturing butadiene from alcohol, a safety glass cutting wheel, or a machine for sawing brass slabs.

To illustrate in more detail the problems the sales engineer must face, suppose he tries to sell lubricants to a shirt factory. The plant manager may tell him that during long periods of operation the sewing machine out-boxes are inclined to sweat, and that sludge formation takes place in the oil he's using now, slowing down the speed of the machine, increasing the operating temperature and staining the cloth. The sales engineer realizes a moisture-resistant lubricant is required, but what lubricant?

Then again, he may enter a plant which complains that its lubricants smoke during heavy cutting operations, and give off a sour odor; a plant where employes complain of skin irritations from lubricants; where oil feed lines are perpetually clogging; where oil discolors metal; where oil is not transparent enough for the machine operator to see the point of contact between his work and the cutting tool; where

a lubricant doesn't furnish the proper cooling action. He may hear all these complaints and scores more—and he must be able to recommend lubricants which will eliminate such faults.

With all his knowledge, however, he occasionally runs into problems too technical for him to solve. In such cases, he calls on well-trained lubrication engineers, who specialize in surveying highly-complicated industrial plants.

Made to Order

Sometimes lubrication engineers discover the problem exists because there is no lubricant made to fit the particular need involved, and so they recommend a made-to-order oil. New lubricants are constantly being produced to meet new or changing industrial needs.

For instance, take the case of textile manufacturers. Since their plants must be kept at high humidity to prevent threads from becoming dry and brittle, they have had to contend with rust as a perpetual headache. After thorough study of the problem, well-trained and competent lubrication engineers recommended new type oils, rust preventive lubricants combining rust protection with outstanding stability. Service tests throughout the industry proved that the new lubricants not only eliminated

rusting, but also reduced the frequency of part replacements ordinarily needed to maintain textile manufacturing machinery in good working order.

For another example, we have the unusual story of a manufacturer of paper corrugated rolls who needed an oil* to remove silicate deposits from his machines. The silicon compound was precipitated on the rolls from glue used to paste the outer pieces of paper to the corrugated part. When allowed to remain, it cut ridges in the rolls, destroying the corrugation. Water easily removed the deposits, but caused the paper to stick to the roll. The paper then tended to wrap itself around the roll, and eventually broke. Oil used by the firm worked fairly well except that wherever it was applied in excess, many feet of paper were ruined by oil stain. Our engineers developed a product that contained just enough water to cut the silicates, and just enough oil to prevent the paper from sticking, and the problem was solved.

To keep sales engineers continually posted on newest developments, so that they will be able to solve as many lubrication problems as possible, special technical bulletins are distributed monthly to all the company's marketing divisions. These bulletins may tell about a manufacturer's experiments with a new type of household washing machine, or may describe new procedures in milling steel and how they affect lubrication, or may give detailed case histories on the performance of the company's various products on varying types of machinery. By reading them regularly, the sales engineer obtains an invaluable picture of marketing activity and needs throughout the industrial field.

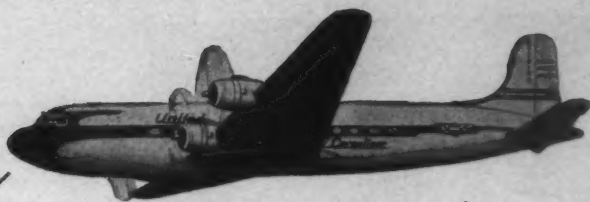
The distribution of lubricating oils is not as spectacular as that of gasoline, fuel oil and certain other petroleum products, but it illustrates the efficiency that characterizes the over-all marketing set-up of the petroleum industry.

We find the blending stocks from which lubricating oils are made stored in huge tanks at refineries, holding thousands upon thousands

(Continued on page 80)

Drums containing industrial lubricants, rust preventive oils and other petroleum items are racked systematically in this large storage room at Shell terminal, Sewaren, N. J.





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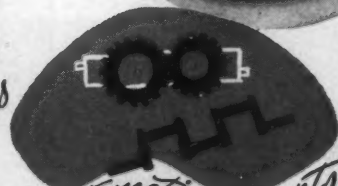
Baby Chicks



Drugs and Serums



Fresh Fruits



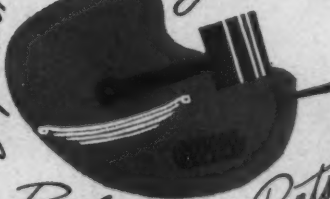
Automotive Parts



Electrical & Communication Equipment



Millinery



Replacement Parts

When sales fall off, management should make a critical examination of its product and of its distribution system. Industrial design is an effective weapon with which a manufacturer can combat lack of response to his product by prospective buyers and by his own sales force.

By M. H. HOEPLI

Executive Vice President
Designers for Industry
New York

Industrial Design

IN THE constant struggle for profit and progress, the distribution field is viewing industrial design, with an appreciative and analytical eye.

The unrecognized and humble beginning of industrial design was in the pretty pictures and startling drawings of artists employed in industries whose product sales were dependent upon appearance. Not until mass production imposed it,

did we acknowledge the need of industrial design as an inherent product element, rather than as mere surface treatment.

During the early stages of quantity production, articles were created from the standpoint of engineering design. The object was considered from the standpoint of function, and the engineer was called on to produce a design which would permit low cost pro-

duction. The products of one manufacturer were considered competitive if they matched those of his competitors in utility, price and quality.

Industry took a surprisingly long time to appreciate that the factor of appearance could play a great role in the final profit picture. Industrial design came into its own when industry realized that of two products equal in

Fig. 2. Turret Lathe. (Before and After.)

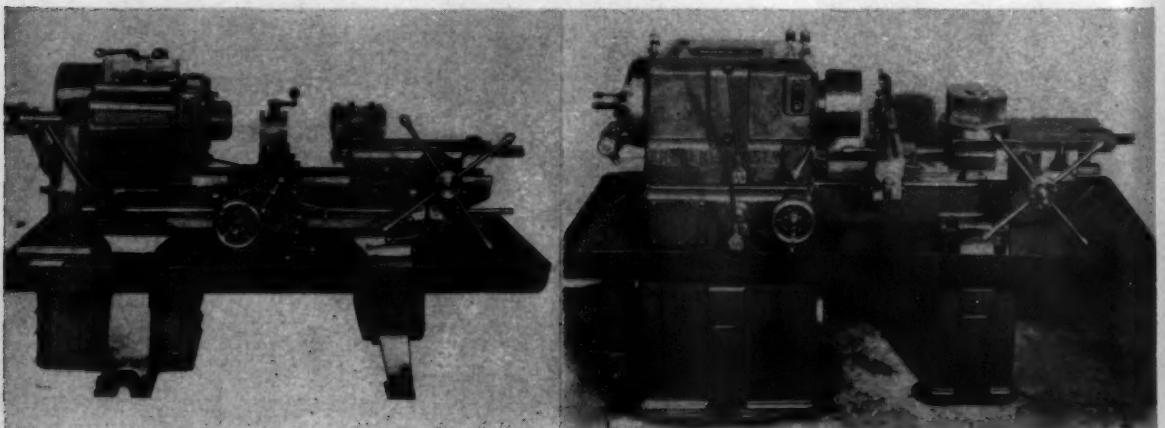
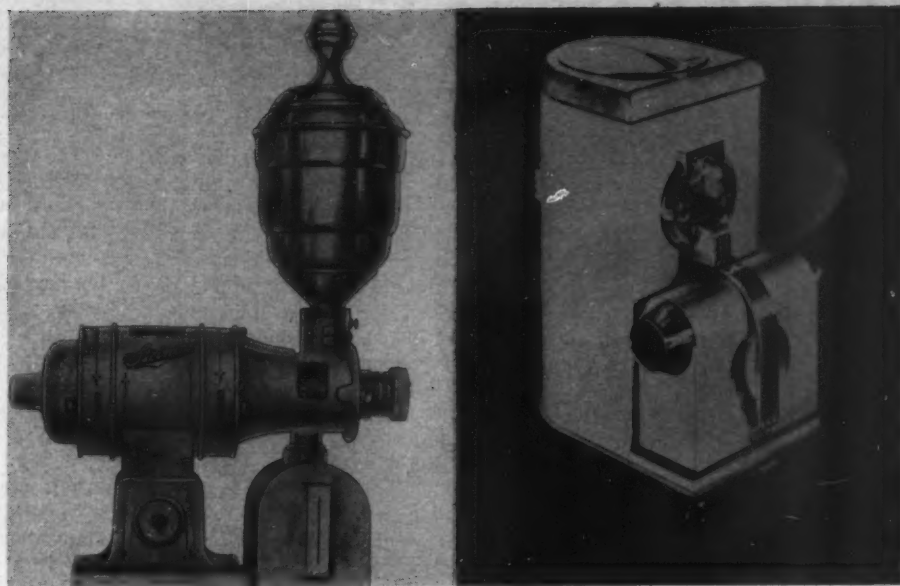


Fig. 1.
Coffee Grinder.
(Before and After.)



ny. Sales Fatigue

utility, price and quality, the one judged more attractive by the purchaser would outsell the other.

As a typical example, study the design of the early coffee grinder, still serving its purpose in many stores. It is representative of design created in an engineering department where basic considerations were: 1. To make a product which would function effectively. 2. To manufacture the product

with the facilities available at the lowest cost of production.

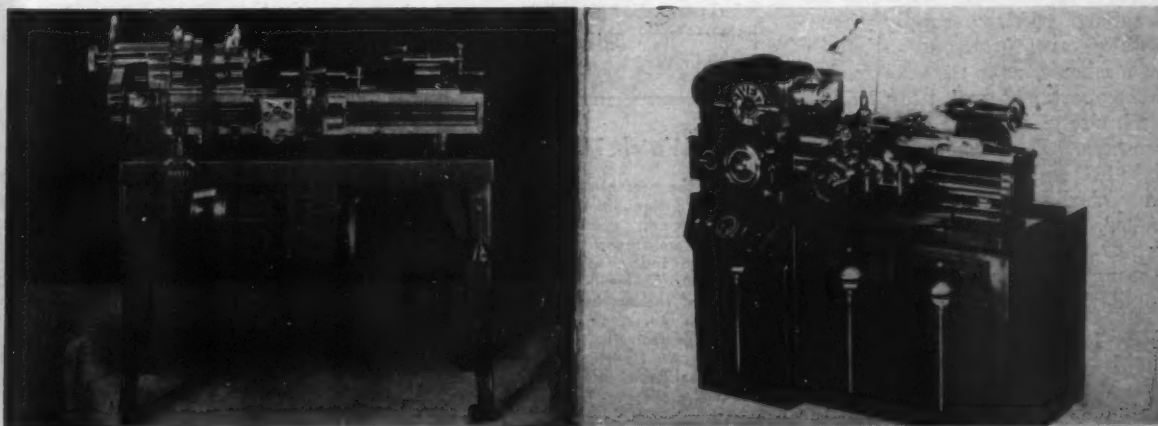
Compare this "old fashioned" design, with the product of creative imagination, blended with knowledge of functional requirements and of production costs. (Fig. 1) Note the simplicity, balance and the clean line of the successor. The industrial designer has produced an article of distinctive appearance, making a powerful impres-

sion by 'eye appeal' on the acquisitive instincts of the purchaser.

Increased sales are not necessarily the only advantage gained. Very often, the new streamlined model costs less to build. Through the experience and skill of the designer, supplemented by the co-operation of production engineers, economies in manufacture may be effected.

(Continued on page 95)

Fig. 3. Rivet Lathes. (Before and After.)



Fleet Service Garage

(Continued from page 39)

work progressed, the office man saw the complete job that was being done and had no further objections.

The first thing to be done was to clean out all the old home-made bins and shelves and make way for carpenters to build the walls and doors necessary to separate the stockroom as outlined. The aim was to provide easy access to the stockroom from the shop or office, but to keep out unauthorized men as far as possible. While the great majority of workmen were understood to be absolutely honest, it was necessary to protect against those who were light fingered. A stock of motor supplies contains so many items used by people who have cars that they are constant temptation.

New Bins

The place had hardly been made ready when the new bins arrived, knocked down, with adjustable shelves and partitions, all of which were to be set up. The biggest problem was in changing from old bins to new, but in such a way that work could go on; parts could still be found; equipment could be kept rolling as usual. This required moving and setting up one section at a time.

Bin sections were 3 ft. wide, 7 ft. high and 12 in. deep. Three sections were constructed first and divided for bolts; one for carriage bolts, one for SAE and one for standard. Using supply house catalogs as a guide and the advice of mechanics as to the sizes needed, a compartment was provided for each size of bolt and for nuts and washers. Each compartment was labelled and the labels were then varnished so that, as they became soiled, they could be washed and kept legible. All such labels throughout the stockroom were similarly varnished.

A peculiar condition came to light. Workmen would come to the stockroom with a spoiled bolt in hand. They would pick out the

necessary new one, matching with the old. Then, having nothing to do with the old one, they would toss it in the bin with the new ones. After a time a bin that was supposed to contain only new bolts had a mixture of new and spoiled. As a result mechanics, often, would select what looked like a new bolt, carry it to the repair shop, crawl under a truck, insert the bolt and then find the threads were faulty. This was true of other parts as well. This meant removing the spoiled part, sometimes with much difficulty, and another trip to the stockroom to hunt for a usable part.

As construction progressed, Williams provided a "used parts" box, open at the end, beside the door leading to the repair shop. Signs requested tossing used parts into that box and warned against throwing spoiled parts in with the new ones. In addition, a gauge, in the form of a ruler nailed to the edge of the bolt bin, enabled mechanics to measure them instead of matching with the old ones. The remedy was complete and effective and had the added value of inspection of discarded parts for possible emergency use before being sold as junk.

Into the next bin section were fitted a number of shallow steel drawers, with adjustable partitions. The drawers were for cotter keys in every desired length and thickness; rivets, round head and flat head; stove bolts, flat and round head; wood and metal screws, both bright and blued; keys, brads,

staples and all such small items that are often as necessary as a complete engine and much harder to find. Every partition was labelled, as well as the drawer itself.

Then began a tedious job that dragged on for many days. The contents of dozens of boxes, cans and old drawers were dumped on tables. Bolts, screws, rivets, cotter keys, nuts, washers and a miscellany of odd items which had been tossed together were carefully separated and examined as to their condition. These ranged from tiny spring washers to huge nuts and bolts. As they were separated, tested and measured, they were put into correct bins or discarded as useless. It was surprising how many items were found mixed with junk that were badly needed and unobtainable at the time.

Odd Sizes

No boxes of junk were left. However, in each bin section, one compartment was labelled "odd sizes" for articles not regularly stocked. In a truck service garage, one never knows what may come in handy.

It may be mentioned here that in placing the rows of bin sections, attention was given to the matter of light. They were so placed that natural light from large windows could be utilized to the fullest extent.

In the same line of sections with the bolts, screws, etc., divisions were made for electrical parts and for carburetor parts. Since this entire row of bins contained a large number of small items, naturally they would be referred to most frequently. Hence this row was placed just inside the door from the repair shop, saving a few steps every time such parts were needed.

As the work went on, the entire garage personnel entered into the spirit of thoroughness with which George Williams considered the manner of use of every item. With a regularity that became almost monotonous came the questions: "Who uses this? How is it used? What else is used at the same time?" When the job was done, mechanics were amazed and pleased

Watch That Match!

"If the present rate of careless waste goes on through 1946, the toll of our real wealth, much of it productive wealth which our people can ill afford to lose today, will surely pass \$600,000,000. That will make 1946 the worst year of reckless burning our nation has ever known, surpassing even the tragic years of vast citywide conflagrations."—Frank A. Christensen, president, The National Board of Fire Underwriters.

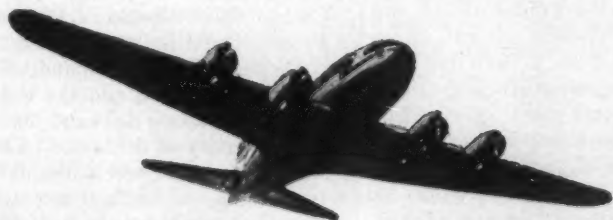
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MIAMI — NEW YORK — WASHINGTON, D. C.



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J. Holmes
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Standardization For Better Marketing

Non-uniformity in fundamentals retards the marketing of industrial and consumer products at home and abroad and is a cause of cost and controversy which lose markets and shrink profits.

STANDARDIZATION of commercial methods and practices on an international basis is a vital need in foreign marketing. One of its main functions, as in the case of national standardization of products, is to facilitate the flow of goods through transition points which occur wherever an article passes from one productive or distributive activity to another. A lack of uniformity at these points not only discourages much profitable international trade, it increases costs and causes controversies between buyers and sellers which often require expensive litigation.

In the marketing of many industrial and consumer products abroad, manufacturers either must modify products intended primarily for home consumption or must manufacture to meet specific foreign requirements. An automobile built in the United States for example, is unsuitable for use on the streets of London because British laws require that the steering wheel be on the car's right side instead of on the left as in this

country. Similarly, power driven machinery, refrigerators, radios and many other devices are unacceptable abroad because of differences in power supplies and in other fundamental factors.

Foreign Standards

Difficulties are multiplied by the fact that where foreign standards do exist, they not only depart radically from our standards and commercial practices but vary from country to country. These differences affect changeability of parts, screw threads, acceptance tests, sizes and grades, direct and alternating electric current, specifications used as a basis for purchasing, nomenclature and definitions of terms used in specifications and contracts, and numerous other phases of production and distribution.

In marketing here and abroad, loose descriptive phrasing used frequently in contracts, such as "all materials shall be of the best commercial quality," and "good workmanship shall be required through-

out," is a prolific source of trouble and controversy since those general terms mean different things to different people.

Despite the fact that the human element in standardization presents difficulties often more serious than technical problems, progress is being made in international standardization. The international activities of the American Standards Assn. (ASA) involve cooperation with other national standardizing bodies abroad.

A United Nations Standards Coordinating Committee (UNSCC) was formed in 1944 upon the initiative of the United States, Canada and Great Britain to coordinate and unify standards wherever possible. Included in its membership are the national standardizing bodies of 15 nations: Australia, Belgium, Brazil, Canada, China, Czechoslovakia, Denmark, France, Great Britain, Mexico, The Netherlands, New Zealand, Norway, South Africa and the United States. Projects in hand extend into a variety of fields and include such diverse subjects as the definition of rayon, shellac, gas cylinders, and terms for the heat treatment of steel. The committee plans to carry forward not only its own work, but, in addition, that of the old International Standards Assn.

(Continued on page 75)

This article describes the movement of one of industry's basic raw materials from the depths of the earth to manufacturers of:

- Petroleum products.
- Chemicals.
- Metallurgical products.
- Coal products.
- Industrial explosives.
- Fertilizers.
- Textiles.
- Rayon and cellulose film.
- Paints and pigments.



How Sulphur Goes to Market

By R. B. JOHNS

*Sales Manager
Freeport Sulphur Co.
New York*

SULPHUR has some connection, either direct or indirect, with nearly every segment of industry and agriculture.

Sulphur is one of the most broadly used industrial raw materials. In one form or another, it is used in the manufacture or processing of virtually every industrial product. It also aids the growth of most agricultural products through its action in dusts, sprays and fertilizers.

The story of how sulphur gets from mine to consumer begins with its production. The locations of the mines, the nature of the mining process, and the physical aspects of the output largely determine the initial stages of distribution. These factors also have much to do with the other phases of distribution and marketing.

Sulphur in the United States occurs along the Gulf Coast. It is

found in conjunction with geological formations known as "salt domes". At present, there are six sulphur mines in production, five in Texas and one in Louisiana. Two of the mines are within a few miles of the Gulf and the others are in the coastal plain area.

99½ Per Cent Pure

Sulphur is produced by a process which provides an output that is better than 99½ percent pure. This process was invented about the beginning of the century by Herman Frasch, a petroleum scientist. Wells are drilled, generally about 1,000 to 1,500 feet,

down to the sulphur-bearing formation. A set of concentric pipes is fitted into place. The well is then ready for operation.

Superheated water, water heated under pressure above its normal boiling point in a power plant, is pumped continuously down the space between the outer and middle pipes. It flows out through perforations near the well bottom into the porous limestone formation that contains the sulphur. The heat of the water melts the sulphur which, being heavier than water, sinks to the well bottom. There it gathers in a liquid pool.

The pressure of the water that has been pumped into the formation forces the molten sulphur through perforations into the space between the middle and inner pipes, which is sealed by a ring from the space containing the hot water. Compressed air in the



Left: Night scene of bridge crane in operation at temporary storage area, Port Sulphur, La. Note barges in foreground. Below: A Mississippi River barge under the conveyor tippie is loaded with sulphur as ocean going vessel awaits turn.



innermost pipe acts as a pump to lift the liquid sulphur the remaining distance to the surface of the earth. Above ground, it is piped in steamheated pipes to large storage vats, into which it is sprayed to cool and solidify. The vats are built up layer by layer until a great rectangular block of solid sulphur is formed. At most mines, 8 to 15 wells are in operation at the same time, the output of each well helping the storage vat grow.

As a preliminary to shipping, sections of the vats are broken down by blasting. This changes the solid sulphur into a combination of lumps and fines. The lumps generally will range from about 6 or 8 in. in diameter to smaller sizes.

In Texas, the lumps and fines are loaded by clam shell buckets into boxcars or gondola cars on tracks that have been laid alongside the vats. These cars may be

sent directly to the plants of sulphur consumers or they may be routed to the deep water ports of Galveston or Freeport where the sulphur is re-loaded on vessels and shipped by water.

In Louisiana, the loading and shipping problem is complicated by the type of terrain. There, the Grande Ecaille mine of Freeport Sulphur Co. is located about 50 mi. below New Orleans on the Mississippi River Delta. The delta marshland is so soft and unstable that the buildings of the mining plant had to be constructed on 75-ft.-long piling. A 10-mi. canal was dredged from the mine area to the relatively firm west bank of the Mississippi, and as there is no connecting road or railroad, this canal is the only transportation link. Employees are transported to and from work in passenger launches, and supplies are barged in and sulphur barged out.

At Grande Ecaille, consequently, the sulphur at the vats is shoveled onto a conveyor belt which carries it to a loading point on the canal bank where delivery is made to barges. Tugs tow the barges to a temporary storage area at Port Sulphur, the town built on the Mississippi bank at the other end of the canal. The sulphur may be shifted by a traveling bridge crane from the barges to the storage area

TABLE I
ESTIMATED DISTRIBUTION OF SULPHURIC ACID
CONSUMED IN THE UNITED STATES**
(Short tons, 100 percent acid)

Consuming Industries	1943	1944	1945
Fertilizers	2,500,000	2,620,000	2,800,000
Petroleum refining	940,000	1,020,000	1,070,000
Chemicals and defense *	2,285,000	2,495,000	2,240,000
Coal products	580,000	620,000	585,000
Iron and steel	535,000	560,000	580,000
Other metallurgical	360,000	340,000	320,000
Paints and Pigments	495,000	530,000	545,000
Industrial explosives	115,000	110,000	115,000
Rayon and cellulose film	415,000	450,000	495,000
Textiles	85,000	75,000	70,000
Miscellaneous	350,000	340,000	310,000
Totals	8,650,000	9,090,000	9,130,000

* Combined to avoid disclosing estimates of direct war applications.

** Chemical and Metallurgical Engineering—Jan., 1946.

(Continued on page 78)

Even though it is necessary to adapt each shipping container for industrial equipment to the specific item being enclosed, there are certain principles of box and crate construction for heavy equipment which should not be violated.

Packing Industrial Equipment

By CHARLES L. SAPERSTEIN

General Manager
Glean's Assortments, Inc.
New York

Formerly Packing Control Officer
Army Air Forces

IN the entire realm of marketing it would be difficult to find a closer relationship between contents and shipping container than that which is to be found in the crating of heavy industrial equipment. Here, industrial engineer, sales manager, packing expert and traffic manager must meet in common consultation to exchange views, as to needs and problems. Without such consultation the safety of equipment worth thousands of dollars is endangered. Perhaps in no other part of the business world has the premise been so fully accepted that a relatively sizeable expenditure must be appropriated for adequate preparation of products for shipment.

Here, we are not dealing with nesting inner containers in a somewhat stronger outer container to be uniformly sealed, strapped and handled. Here, we cannot con-

sider standard stock sizes of cartons, boxes or crates. Here, is an entirely different approach to the problem of packing.

First is the problem of a carefully engineered case, crate or platform to which most pieces of heavy duty industrial equipment must be bolted or otherwise secured. Exceptions to this are those items which may be transported as they are, with blocking and bracing, as the only requirements. Among such items are girders, booms, vehicles and other units

within their own housings. Later, uncrated materials in transit will be discussed. When industrial equipment is of a nature requiring protection of an outer container, however, then such shipping piece must be especially designed so that the unusually heavy weights and stresses of the load may be met by adequate construction at the contact resting points.

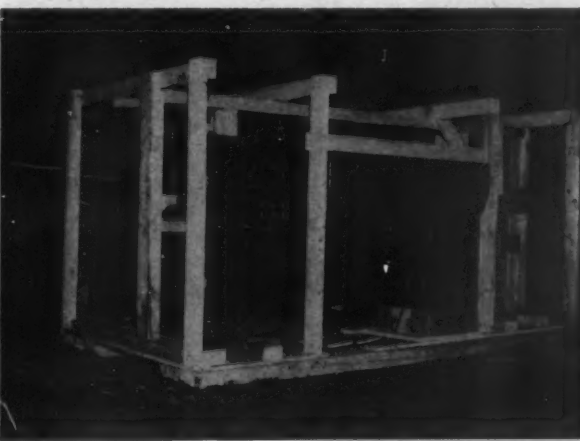
Next to be considered is any temporary preservation methods or surface treating to be done in order to prevent corrosion in transit.

A third consideration is the matter of disassembly; also spare and auxiliary parts, special wrenches and other tools which must accompany the shipment. How far is disassembly to go? Are disassembled parts to be packed and protected within the crate bearing the

(Continued on page 56)

Advanced stage in the construction of crate for a turret lathe.

First stage. Careful construction will avoid costly destruction.





An informative, interesting and challenging critique of manufacturers' advertising copy by a veteran engineer who spends more than 20 hours a month reading, digesting and clipping the ad pages of trade and technical magazines.*

An Engineer Analyzes Industrial Advertising

By HARVEY S. PARDEE

*Harvey S. Pardee & Associates
Engineers
Chicago, Ill.*

I AM told that the publishers are aware of the faults resulting in ineffective advertising but do not feel in position to do or say much. As a mere reader, I can, therefore, speak without diplomatic inhibitions or intentions to hurt the interests or feelings of anyone.

My own relation to the subject is that of a designer, specification writer, and consultant on materials, equipment and machines used in industry. It is part of my work to keep track of new products and standard products entering into design. I do not suppose this position unique; it is one of the source points in the selection of merchandise which advertising tries to promote.

The collection of information regarding new products and standard products has always been difficult but never more so than today. The complications inherent in modern machines and the virtually endless variety of materials and devices available impose an almost impossible burden of time and labor on machine and product designers. It is not a job for narrow specialists but rather for those who must mind the whole picture and make judicious choice and comparisons in widely diversified fields of technology.

In the field of manufacturing, the most prolific and up-to-the-minute source of information is in the advertising pages of the technical and trade magazines.

To begin with, it is seldom necessary to guard against fraudulent goods or dishonest advertising in the technical fields. Reputable publishers seem to be doing a good job at looking after that angle. The only complaints and constructive suggestions refer to incompetent advertising which wastes the reader's time and the advertiser's money.

Good Pictures

Good pictures are most helpful to me. The most effective picture is an excellent illustration of the article itself or its applications. One can then tell at a glance if the article is in a field in which he

is searching. The picture should show clearly what the article is, how it works, its general shape and dimensions, and its unique features. It should first draw attention, then inform.

Extraneous generalities are irritating. The picture of a giant tank or bulldozer bouncing over a hump or a B-29 about to roll into a nosedive is not good advertising in a technical or trade publication, for Whatziz setscrews, even if they do hold said plane or tank together. In advertising a standard small motor, it is ineffective to show a giant press with the tiny article mounted somewhere on it. But if the picture shows a detail of the motor bearings or of the slot insulation, it really does attract and hold attention—where attention counts.

Cheese-cake and cartoons call momentary attention to the picture but not the product. The stuff is badly overdone, even when clever. It leaves a bad impression as a time-waster, like the salesman who takes up your scarce time in telling a funny story.

Likewise, pictures of important-looking executives poring over prints on a table or doing impressive finger pointing seem plain silly. Men who really make de-

(Continued on page 64)

*Reprinted in part, by special permission, from an article that appeared in a recent issue of *Industrial Marketing*.

The series of forms and routine developed by Turco makes the entire follow-up operation as simple and automatic as sleeping late on Sunday.

Converting Inquiries Into Sales

By HARRY RORICK

Manager
Advertising and Public Relations
Turco Products, Inc.
Los Angeles, Cal.

ALTHOUGH the primary purpose of most manufacturers' advertising is not necessarily to pull inquiries, still they constitute one of the most concrete results of an appropriation spent. Every manufacturer merchandises his advertising campaign to his dealers, brokers and distributors. However, when they receive specific sales leads direct from the manufacturer it does more to sell him on the advertising program than anything else.

We have found that almost phenomenal results can be obtained when the advertising department follows through to see that every effort is made to convert each inquiry into a sale. We have devised a series of forms and a routine that makes the entire follow-up operation as simple and automatic as sleeping late on Sunday.

As a result of advertising running in 96 business, trade and technical publications, new literature and product items and articles, Turco receives several hundred inquiries weekly. These stem from practically every industry: dairies, air lines, restaurants, metal plants, manufacturing plants, bottling plants, and dozens of others.

When the inquiries arrive in the morning they are sorted into several classifications:

1. Those from libraries, students, etc., that require no follow-up.
2. Those presenting a special problem that require a personal letter from the technical department.
3. Foreign letters, which are cleared through the export department.

this record gives an instant visualization of what publications are pulling, what products or operations are creating interest and from what areas. Here is another spot where the advertising manager can give valuable information to the national sales manager.

Literature is sent to libraries and others, obviously not in the market, with no follow-up. All others are recorded on the sales-

(Continued on page 66)

4. Requests for further information, literature, or a salesman's call.

These are recorded according to publication, territory, and advertisement. With the flip of a page,



Cause: Bus line superintendent finds an interesting article; requests additional information.

Effect: Salesman calls on prospect. They solve problems together, and the sale is completed.

Industrial Packing

(Continued from page 53)

principal unit or are they to be boxed in a separate container? Is reassembly self-evident or is a chart, diagram or booklet of instructions needed as an integral part of the shipping unit?

A final special consideration for packing of industrial equipment is relating the shipping unit to the contemplated means of transportation. Invariably we are dealing with mass weight. What can be done to make the complete unit more maneuverable? For example, handles, rings, extra cleats, grappling bars, positioning of skids, inspection doors and a dozen and one other features may be added to the shipping crate to ease the job of movement from plant to destination. Also, the crate should assist, not retard, the placing of the machine or equipment in its ultimate position.

The following true experience in connection with shipping a heavy deadweight is given to illustrate that even though it is necessary to adapt each shipping container for industrial equipment to the specific item being enclosed, there are certain principles of box and crate construction for heavy equipment which should not be violated.

During the height of the movement of war supplies I was called in to analyze the cause of failure

to a high percentage of shipping boxes each containing one rear axle and housing for heavy duty trucks. The shipper, in casing this material (each weighing between 700 and 800 lb.) had fallen into the fallacy of thinking that the heavier the item to be boxed, the heavier the boards making up the box should be. Actually, the boxes in this instance were found to be of 2 by 4 in. lumber on all sides with double 2 by 4 in. heads. In addition, towards either end, massive girthwise cleats encircled the containers, presumably for added protection. Inside, blocking had been done to reduce internal movement. Altogether between 400 and 500 lb. of tare weight had been added. Yet, approximately one container out of three had come apart in transit.

Strategic Packing

Obviously, many things were wrong. First, one does not continue the formula for simple box construction when weights begin to exceed 400 lb. Not heavier lumber, but strategic placing of reinforcing diagonals or internal frame members is the secret of preventing the warping and splitting of wooden containers.

A second error in construction

was the use of heavy encircling cleats. These served only to leave the center of the box in suspension, whereas, it was in the exact center that the transmission gear housing created the greatest weight-bearing factor. Thirdly, in building up what appeared to be a massive container with equal strength on all four sides, freight handlers treated no one side as top and the internal weight had continually shifted from one wall to another.

In place of the faulty containers, a simple skidded base was designed with cradles to receive and lock in place a single axle. With the exception of the skids and two short load-bearing frame members, one-inch lumber was adequate for the balance of the container. Sides and top were fabricated with just sufficient reinforcing to allow for possible stacking of the containers, several high. Later, upon rechecking the results of the recommended change not only was it confirmed that damaged containers had almost entirely disappeared with considerable savings in lumber used, but it was gratifying to learn also that production on the part of the crew preparing the axles for shipment had increased about 70 percent.

In shipping industrial equipment, it is a safe premise on all materials weighing above 500 lbs. that a better transportation job will be accomplished if it is practical to ship a product mounted on a base

(Continued on page 89)

Poor construction will not stand the heavy shocks of shipping.

Dependence on the side walls alone for protection is dangerous.



DD DISTRIBUTION DIGEST

● **NEW AIR ASSN.** The Independent Airfreight Assn., Inc., with offices at 420 Lexington Ave., New York 17, has been formed to serve airlines engaged exclusively in carrying cargo and to foster regulation in public interest. Trustees are: Robert W. Prescott, president, National Skyway Freight Corp., Los Angeles; Earl F. Slick, president, Slick Airways, Inc., San Antonio; Harry F. Playford, president U. S. Airlines, Inc., St. Petersburg. All are pilots and war veterans.

● **SHORTAGES.** Worldwide shortages in basic raw materials are serious. A set aside order issued by the Civilian Production Administration, effective Aug. 1, emphasizes the lead shortage. One-fourth of lead production will be assigned to rated orders; automotive replacement batteries will get only 19 percent of 1944 use against 22 percent earlier, and other special allowances will be limited to 86 percent for the second quarter. . . . Copper shortages have hit the electrical field causing plant curtailments and shutdowns. Shortage of wire bars is particularly acute. Government holdings are said to be only about 1,000 tons. The industry uses about 60,000 tons monthly. . . . Common nails are so scarce, 360,000 tons short of normal production, that the housing program seems likely to bog down for want of them. Present estimates are that nail requirements for this year will exceed production by about 180,000 tons. . . . Zinc, tin, pig iron, steel scrap and lumber also are in the short column.

● **FM RADIO.** In a step of far-reaching importance to the entire

A review of recent trends in equipment and techniques likely to contribute to more efficient and economical distribution.

radio industry, Phileo Corp. has licensed Radio Corp. of America to use Phileo advanced frequency modulation system and about 600 other patents and inventions relating to radio and television. Watch for more FM news. Charges that vested interests favoring amplitude modulation have done everything possible to prevent FM development have been frequent

and public of late and there are rumors of a possible Congressional investigation after the fall elections.

● **RETAIL DELIVERIES.** Recent abandonment by Macy's, New York department store, of its delivery service after 88 years, may indicate a major trend. Macy's turned over 500 trucks, which delivered 65,000 packages daily to be operated by United Parcel Service. Retail deliveries in world's most populous urban area, because of increasing congestion and costs, evidently didn't pay one of world's largest department stores. In most instances, authorities say, contract and common carriers now operate more economically in congested areas than private carriers.

● **TRUCKING COSTS.** Long distance trucking is another problem. Lack of statistics has been a complaint for sometime past. Shippers who want to know what public motor carrier's do with revenue dollars should look into a recent study made by American Trucking Assns., based on experience of Class 1 carriers. Here's the breakdown: 28.2 percent goes for transportation expenses; 17.2 percent for terminal expenses; 16.3 percent for maintenance and garage costs; 8.7 percent for administration and general costs; 8.4 percent for operating rents; 6.4 percent for taxes and licenses; 5.3 percent for insurance and safety; 3.8 percent, net operating revenue; 3.5 percent for depreciation; 2.2 percent for



A versatile device is the new Transtacker, hand fork truck unit just announced by Automatic Transportation Co., which does the work of a standard fork truck and high-lift platform truck where size, weight, speed or cost make the larger units impractical. In addition to its primary job of stacking unit loads, the new truck is designed to perform innumerable "odd jobs." One of these is illustrated above; loading and unloading street trucks where loading docks are not available. With both drive and lift motorized, the Transtacker does all the work both in moving the load and in placing it on the truck or freight car.



Meat is high literally as well as figuratively these days. Illustration shows Guernsey calves in a twin engine cargo plane which is claimed to have made the first long-distance mass delivery of cattle by air. The Guernseys left Teterboro Airport, N. J. recently for Bogota, Colombia, S. A.

sales, tariffs and advertising. A net of 3.8 percent in the face of rising costs and competition isn't much of a cushion.

● **CONTRACT AIR CARGO.** A recent comment by Dr. John H. Frederick, air cargo authority, on American Airlines entry into the contract air cargo field is pertinent and to the point. Writing to our editor, Dr. Frederick says:

"What has long been rumored has finally come about. American Airlines, taking advantage of provision in its certificate of convenience and necessity from CAB, to fly anywhere at any time on a contract basis, has set up a contract cargo division under James E. Wooten, formerly air cargo manager of the company. This makes air cargo airline business in a very real way. Plane-load-lots only will be handled at 11c a ton-mile. This is lowest air cargo rate yet made available to shippers, and should make some 174,740 tons of cargo available annually from 33 industries, according to recent studies of air cargo potentials. American can take this step because it plans to use surplus DC-4s basing them centrally at St. Joseph, Mo., and because it already has a traffic soliciting, service and maintenance organization covering the greater part of the United States.

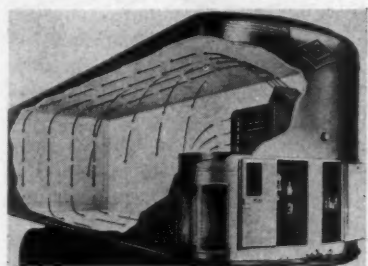
"This move need not have surprised the non-scheduled operators, chiefly the "veteran" lines as it appears to have done. The handwriting has been large on the wall for everyone to see. American is just leading the procession and other airlines doubtless will follow very shortly."

● **R. G. CULBERTSON**, president, Culbertson Warehouse & Deposit Co., Seattle, writes to say that the

next convention of the Mayflower Warehousemen's Assn. will be held May 25-29 at the Empress Hotel, Victoria, B. C. Without knowing any of the details, we venture to say that R. G. must have done a whale of a selling job to get Mayflower that far west.

● **2,700.** While preparing to enforce new safety regulations for non-scheduled air carriers the Civil Aeronautics Administration found 2,730 such operators with 5,529 aircraft, which airmen say is a rank under-estimate.

● **FOG FOR BUGS.** A new fog machine for killing bugs is in



Trail-Aire Conditioner, sold by Fruehauf Trailer Co., is rated for temperatures down to 10 deg. F., and will preserve pre-cooled products such as ice cream, meats and frozen foods during transportation by motor vehicle. The diagrammatic drawing shows how air circulates through the trailer body at the rate of 1,800 cu. ft. a min. New models of the refrigerating system capable of maintaining temperatures of 10 deg. below zero F. will be in production soon.

production by combustion equipment division of Todd Shipyards Corp. Known as a "Tifa" or Todd insecticidal fog applicator, it has been used successfully in exterminating moths and other insect pest which plague textile, carpet, furniture and warehouse industries.

● **RECORD COMPETITION.** Some 90 new firms have entered the phonograph record field in the past few years. Until 1940 RCA-Victor, Columbia and Decca practically dominated the industry. Now radio set makers, motion pictures companies and radio networks are completing plans to produce and

market records hoping to cash in on potential \$100,000,000 market. Production last year was 156,000,000 discs for which tune-loving Americans paid \$80,000,000.

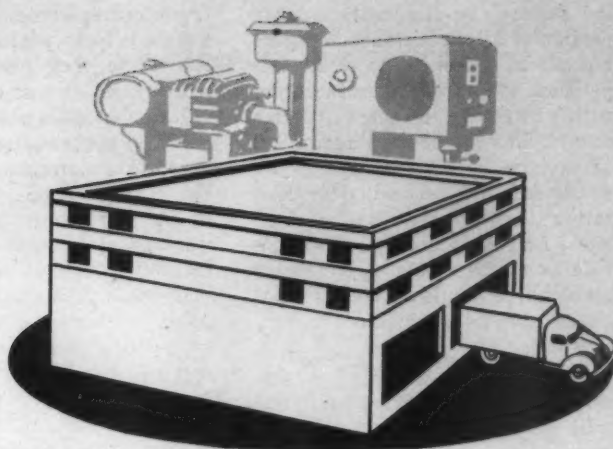
● **CANNED FROZEN FOOD.** American Can Co. is beginning production of a new type of frozen food container which is said to make possible high speed filling and closing operations for the first time in the frozen foods industry.

● **POWER.** There's no electric power shortage in the U. S. To meet the demand for war power the electric utility industry installed 11,000,000 kilowatts of generating machinery with a total of 300 billion kw. hours of electric power generated for war purposes, according to Edison Electric Institute. The industry can meet all needs current or prospective.

● **NEW PRODUCTS.** Recent announcements of new equipment include the following: New safety steps for trucks, by Safety Step Co., Los Angeles; new light weight portable conveyor for industry, by Material Movement Industries, Chicago; new motor generator charger for motorized lift truck batteries, by Hertner Electric Co., Cleveland; new jiffy lift car jack, by Jiffy Lift Sales Co., Long Island City; automatic high speed barrel loader, by Revolver Co., North Bergen, N. J.

Development of a new two wheel trailer with tilting platform and patented load leveling hitch has been announced by C. N. Munroe Mfg. Co. The device enables one man to load heavy objects, such as industrial equipment. It is said to effect substantial economies in handling.





Marketing Industrial Units Through Public Warehouses

THE battle for business in the industrial market, as well as in the consumer market, is just beginning. You who manufacture for other manufacturers know that it will be the manufacturers who offer the most in service, as well as the best in products, who will win victory and survive with prosperity. In this matter of service, public merchandise warehouses stand ready to help all manufacturers, whether they are producers of industrial products or of consumer goods.

Tomorrow's customers, as did those of the pre-war days, will want what they want when they want it. This means that manufacturers must consider the merits of establishing "spot stocks." The nation's public merchandise warehouses provide the manufacturer with the means of so doing.

All too often, manufacturers think of "spot stock" services only in relation to consumer products. Even some of us in the warehousing industry are guilty of the same kind of thinking. "Industrial products? No, we don't handle many of them," was the typical off-hand reply of some of my fellow warehousemen to a question on this

Spot stocks and "plus services" are major motivations why manufacturers of industrial products use public merchandise warehouses.



By WILFRED F. LONG

President
Merchandise Division
Missouri Warehousemen's Assn.
and
General Manager
S. N. Long Warehouse
St. Louis, Mo.

subject. But after a moment or two of thinking about the question and recalling their accounts, most of them could list numerous industrial customers.

Drill presses, drying ovens, batteries, conveyors, crucibles, grinding wheels, lathes, chemicals, lubricating oils, tar, plastics, lumber, cocoa beans, paper, copper, aluminum, tin, crude rubber are some of the many industrial commodities now being stored in public merchandise warehouses. Because warehousemen serve these accounts in exactly the same manner as they do

those concerned with consumer goods, they seldom stop to classify them as industrial products.

Spot stocks provide a major motivation for manufacturers of these industrial products to use public warehouses.

One cabinet manufacturer, for instance, is using them to maintain a supply of his cabinets in the major radio manufacturing centers. By placing his cabinets where his customers, the assemblers of radios, may be supplied immediately upon order, rather than being forced to await shipment from

the factory, he eliminates a large portion of sales resistance and puts himself in a position to meet competition, even from manufacturers with plants in the same city. He also obtains the obvious advantage of savings in freight expense by consigning in carload quantities rather than in less than carload lots. And he is not forced to provide as much storage space at his plant as he would if he were not able to ship his production directly to warehouses.

Can companies offer another example of manufacturers of industrial products who are now utilizing public warehouses in their marketing programs. Since many of the fruits and vegetables which are packed in cans are extremely perishable, the can companies have made it a practice to maintain large spot stocks of cans in canning areas during the packing season. The packers are thus enabled to devote their entire space to production, since they are not required to store large supplies of cans. Obviously, the can companies who provide such service have a decided sales advantage over others who do not. In many cases, a delay of one day, or even a few hours, while waiting for cans to arrive, could mean the loss of thousands of dollars worth of

fruits or vegetables. Public warehouses help to protect against this loss while they protect can companies against lost customers.

Raw materials also are stored in public merchandise warehouses. Some raw materials are stored by the manufacturer who will use them, but others are placed in warehouses as spot stocks in the marketing process of the original producer. A western mining company, for instance, which produces ozocerite, a waxy mineral used for making candles, etc., maintains spot stocks of the mineral in its original form at various warehouses, where it is accessible to factories that use it regularly.

Spot Stocks

Likewise, an electrical supplier, who manufactures copper wire and electrical parts which are raw materials, so to speak, to the makers of electrical appliances, motors, etc., is utilizing public merchandise warehouses across the nation so as to place spot stocks of his products at the disposal of his customers.

Beyond raw materials, factory machinery, and parts which go to a plant for final assembly, there is another variety of industrial products whose distribution, and therefore, marketing, is facilitated

greatly by the use of public merchandise warehouses. This variety of products includes lubricating oils for keeping machinery in working order, cleaning compounds for maintaining factory cleanliness, chemicals for use in manufacturing process, and a thousand and one related items without which no factory could function properly. Many of these items are similar to goods for consumer use. In either case, to whichever market they are destined, the maintenance of spot stocks by the manufacturer is a practical aid in their marketing.

As evidence of this, witness the activities of a manufacturer who has just established a line of industrial cleaning compounds and is using the services of public merchandise warehouses to provide a means of opening new markets. He has established stocks in warehouses in virtually every major manufacturing area of the nation, knowing that the immediate delivery which public warehousing makes possible will aid him to "get his foot in a door." Similar examples of other sellers of industrial products who have used warehousing to help provide them with an entree to new markets are frequent.

In some cases, where the manufacturer makes several different products, or several models of similar products, the maintenance of spot stocks at a public warehouse, and particularly the filling of orders from those stocks, calls for detailed effort on the part of the warehousemen. This they, being trained specialists in storage, are well able to offer, handling all phases of physical and clerical detail so as to leave only the actual selling of the goods to the manufacturer.

A manufacturer of electric motors who, before the war, took advantage of the spot stock services of public warehouses comes under this classification. His spot stocks included motors of several different sizes and types which the warehouse stored separately, filling detailed specific orders from his salesmen and even from individual customers, whom the manufacturer had approved. Frequently, it took technical knowledge for the ware-

Saves \$200,000 a Year

International Harvester Co., largest manufacturer of farm equipment in the world, now is adding more than \$200,000 a year to its income in economies achieved through the use of wirebound shipping containers such as the one shown above.

Harvester disclosed recently that it has saved more than \$1,000,000 in shipping and container costs since the company began using wirebound boxes and crates approximately eight years ago.

In addition to reducing freight charges, the lightweight containers also cut shipping damage losses because their flexible construction enables them to take more punishment than heavier, rigid containers.

Lower shipping costs and reductions in damage losses, however, are only part of the economies which the company has gained, according to R. F. Weber, Harvester supervisor of packing and loading.

Mr. Weber pointed out that the simplicity of the wirebound container assembly has resulted in a 50 percent saving in the time required to load and prepare boxes and crates for shipment. In addition, the company's storage space for containers has been increased approximately 65 percent.



(Continued on page 82)

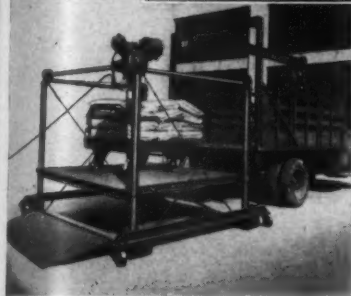
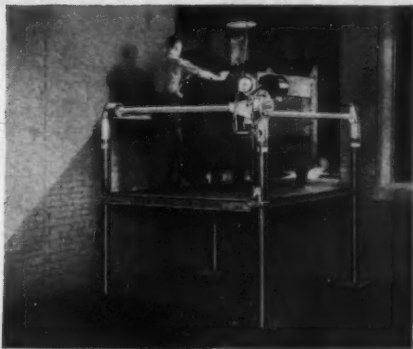
man-saver

Handles your heavy loads
from level to level

Safely - Easily

NEW **SERVICE LEVELER**

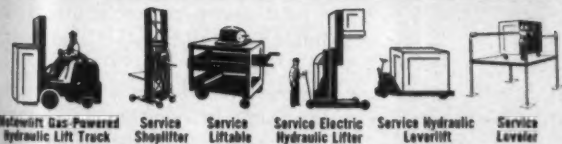
*Simplifies movement
of factory trucks be-
tween two floor levels*



*Portable model at ad-
ditional cost—can be
moved to facilitate
loading and unloading
of trucks in factory
yard, etc.*

Save your workers a lot of backaches—save time, trouble and money, by handling heavy loads from level to level with the new Service LEVELER. Dependably powered by a rugged, fully-enclosed, 1 H.P. motor, it lifts as much as 6,000 pounds as high as 5 feet . . . in less than a minute. Loads, machine and operator are fully protected under all operating conditions. Outstanding safety features include: easy manual control of starting and stopping at any height; automatic top and bottom limit stops; positive motor cut-off stops; centrifugal safety governor; slack cable shut-off; post guard rings. Here's a unit that can be installed anywhere in just a few hours at amazing low cost . . . requires no sub-surface installation . . . obsoletes slow, dangerous manual handling . . . pays for itself in a very short time. Write for detailed specifications today.

Cost-Saving Service Materials Handling Products



SERVICE CASTER & TRUCK CORP.

Executive Offices: Albion, Michigan
and Somerville 43, Mass.

REPRESENTATIVES IN ALL PRINCIPAL CITIES
AUGUST, 1946

TOMORROW'S LIFT TRUCK

Here Today!



LONG-TERM ECONOMY
from the PLUS features of
**SERVICE
MOTOWLIFT**

LOWER operating and maintenance cost for a longer time is just one of the positive advantages you get with the new Service MOTOWLIFT. These better-built fork-lift trucks have many superior features that you can't afford to ignore. Powered by the efficient and economical Ford 4-cylinder tractor engine, the Motowlift has a heavier, all-welded steel frame; 8-roller carriage in the hydraulic lift assembly; anti-leak, straight-line-thrust tilt cylinders; plus other advanced construction features which assure long term economy. Before you buy any lift truck, see how the MOTOWLIFT saves time and money on material handling. Ask your Service Distributor for a demonstration.

- Gas Powered for 24-hour-a-day service by the famous 4-cylinder Ford tractor engine.
- Wide Range of Models for handling various loads and lift heights.
- Highly Maneuverable—Short (68") Outside turning radius.
- Compact—Wheelbase, 40" Overall-length, 74 1/2".
- Safety Streamlined—Low center of gravity. Maximum visibility. Scientifically balanced.

*Prompt
Delivery!*

Your MOTOWLIFT is ready now to save you time and money. See your Service Distributor or write us today.

SERVICE

CASTER AND TRUCK CORP.

Executive offices: Albion, Mich.,
and Somerville 43, Mass. Represent-
atives in all principal cities.

POWER LIFT TRUCKS
MANUAL LIFT TRUCKS
LIFTERS - CRANES
TRUCKS & TRAILERS
DOLLIES - SKIDS
CASTERS - WHEELS

Aluminum has many advantages as a construction material: weather resistance, heat reflection, light weight, inherent beauty, ease of application and low cost. Since 1940, other metals have increased in price, while the cost of aluminum has tended to decrease steadily.

Aluminum

In the Building Industry

INTEREST in the use of aluminum is growing daily. As the various problems and desires of the building industry are presented to our technicians, fabricating and construction methods, gage and alloy requirements for special purposes will be established. As such information, technical and general, becomes a part of the increasing fund of knowledge, the uses of aluminum will expand greatly.

Between 1883 and 1892, only 559,000 lb. of primary aluminum

By **JOHN A. SERPELL**

*Industry Manager
Building Products Division
Reynolds Metals Co.,
Louisville, Ky.*

were produced in the United States; 6,600,000 in 1903; 35,400,000 in 1910; 138,000,000 in 1920. The turning point in aluminum production came in 1936 which showed an increase of 88½ percent over 1935. War years saw a further

growth with 1,552,892,000 lb. produced in 1944.

The cost history of aluminum is something to take into consideration. Since 1940, other metals have increased in price while the price of aluminum has decreased steadily, and it is continuing to go down because of manufacturing improvements. We are learning every day how to reduce the price of aluminum further.

The satisfactory use of aluminum in the field of building products was demonstrated many years ago. We might cite a few examples: The aluminum roof on a church in Sydney, Australia, built some 65 years ago, is still in excellent condition. The aluminum pyramid on the Washington Monument has been there for 61 years. The doors of the Cincinnati, Ohio, Union Station have been used 24 hours a day for approximately 15 years without deterioration.

Aluminum is not being offered as a cure-all. However, aluminum has many features which make it by far the most outstanding material in countless applications.

The important characteristics of aluminum are apparent. First is its surprising durability. Rusting is absolutely out, the term, in fact, cannot be applied to aluminum. Further, aluminum retains its pleasing appearance even under the most corrosive conditions. It is suitable for buildings in damp and humid climates.

Secondly, it is light in weight, being roughly one-third as heavy as steel. Consequently, when used

This article is based on a talk by Mr. Serpell at a recent meeting of the National Assn. of Sheet Metal Distributors, Atlantic City, N. J.

Aluminum roofing eliminates the necessity for frequent repair of this plant. Formerly corrosive fumes made it necessary for an entire new roof to be built every few months.



for a roof or a roof deck, it requires a smaller cross-section of supporting members than other types of metals. Few structural members are as yet standardized. It is our aim in the future to establish the standardization of a smaller cross-section in supporting members by the wide-spread use of aluminum in construction.

High heat reflection is another advantage. Approximately 10 percent reduction in temperature inside a building is obtained when aluminum is used. The water collected from the drainage of an aluminum roof is absolutely non-toxic. This is a tremendously important fact to farmers in many localities.

Finally, aluminum is readily available. While iron is 5½ percent of the earth's crust, aluminum is 8 percent of this crust. So actually more aluminum is available than iron.

A question uppermost in your mind may be, "When can we get corrugated aluminum sheet?" A definite answer is not possible at this time. Corrugating machines have been acquired and more are on order; and a vast increase in production of flat sheet will soon be a reality.

A special alloy for corrugated roofing and siding has been developed. It is virtually the same as that used in aircraft production. The alloy itself in the sheet is pureclad on both sides; that is, 99.4 percent pure aluminum covers both sides of this sheet. There is nothing that has to be done to it; no coating of any type. It is applied in virtually the same manner as galvanized corrugated sheet. This is the material that will be available shortly in volume.

Aluminum sheet will hold paint. While it is not necessary to paint a sheet that is used on a roof or as siding, it can be done successfully. Also we are working toward greater ductility in the alloy for forms other than corrugation. We are corrugating it to the extent that we are equipped to do so, but we are limited because certain machinery is yet to be acquired.

As for aluminum's place in the future, it is evident from the above

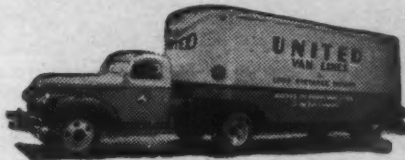


UNITED VAN LINES

INC.

**LONG
DISTANCE
MOVING**

To and From Everywhere



Whether you're moving 300 miles or 3000 miles, United Van Lines, Inc. gives you a personally-supervised service every step of the way.

The same van — and the same driver — go all the way through. When he arrives at your new address he knows exactly how the van is loaded—where each piece of furniture, every fragile article is located in the load.

Ask your local United Van Lines, Inc. Agent about United's "Through Service" — to and from all 48 states and District of Columbia.

GENERAL OFFICES — ST. LOUIS (12), MO.

Telephone: DElmar 4600



**FORD
TRUCKS
LAST
LONGER!**



*Half of all the Ford Trucks
now on the job are
at least 9 years old!*

that it offers splendid possibilities for building materials.

Aluminum has strength; it is light in weight and because of lightness it offers ease and speed of application. It is durable, has inherently a pleasing appearance and is economical. Many feel that aluminum is the coming building material.

At present, development work is continuing. New designs of roofing and siding are undergoing experimentation. As a producer of aluminum, we know exactly where we are going in developing an alloy that we can use and that will be successful when applied to roofing. However, statistics as to types of roofing, the amount of each type needed and in demand, will come from the sheet metal distributors, the men who have their fingers on the pulse of the nation.

Loading tables and similar statistical data so necessary in the successful application of new materials are being prepared. In this work, we must start from scratch, since all available material on the use of other metals is of no value when applied to aluminum. And here again assistance of the sheet metal distributor and dealer will be appreciated, inasmuch as our solution of these vari-

New AWA Members

Since Jan. 1, 1946, the following companies have been elected to membership in the Merchandise Division, American Warehousemen's Assn.:

Bonded Distribution and Storage Co., Pensacola, Fla., Couey Storage and Transfer Co., Trinidad, Col., Ben Dieke Transfer and Storage, Inc., Mankato, Minn., The Dodd Warehouses, San Francisco, Empire State Warehouses Co., Brooklyn, Federal Warehouse Co., Houston, Fox Point Warehouses and Terminal Co., Providence, R. I., Harris Moving and Storage Co., Houston, St. Louis Terminal Warehouse Co., Field Warehousing Division, St. Louis, Shaw Warehouse Co., Birmingham, Tacoma Moving and Storage Co., Tacoma, Terminal Warehouse Co., New York.

ous problems will be reflected by making available more and better aluminum products.

Just a word as to the controversy about the type of nails to be used in the application of the corrugated roofing sheet. We cannot recommend a lead-headed steel nail, although we have been urged

to do this from all sides. Because of laboratory tests which we have conducted, we do not feel that we can comply with impunity. We have tested lead-headed steel nails, copper nails and the hot dipped zinc clad nail. The latter is by far the best. In using an unclad steel nail, a certain amount of galvanic action is encountered. The fact that zinc and aluminum are similar in their electro-chemical properties reduces the chance of electrogalvanic action.

In 1939, the percentage of aluminum used in building and construction was 8 percent, a very small proportion. The postwar figure as estimated by a recognized organization is 9 percent, an increase of only 1 percent. Reynolds Metals does not believe that to be correct. The inherent advantages of aluminum coupled with foresight in its usage indicates that this estimate is far too low.

When thinking of aluminum, remember its weather resistance, heat reflection, light weight, inherent beauty, ease of application and its economy. Aluminum is a peacetime armor against the enemies of low cost and comfort, and we are planning to offer it as an armor for all types of buildings.

Engineer Looks at Advertising

(Continued from page 54)

cisions and act on information gleaned from technical advertising don't care for pictures of themselves in the act, or the studio standins who supposedly do the posing.

Big-type printing probably gets the least attention, if it is noticed at all. Fine type will be eagerly read, if interesting.

Our next point refers to advertised claims for quality. No honest and sensible man shouts his personal virtues. Those who do are suspect. When well known and responsible manufacturers commit this too common offense in advertising, we don't suspect them particularly; we simply set it down as incompetence in the advertising agency which grinds out tooth-

paste advertising routine and uses the same style everywhere. May I appeal to the agencies to realize that their technical readers probably know more about the products and the qualifications of the advertiser than the agencies themselves.

As a part of the world at large, the readers of technical literature are a small group, almost a fraternity, including the advertisers with whom they deal year in and year out. It seems rather foolish to try to tell in extravagant language, of the marvelous craftsmanship exhibited by well-known manufacturers. If all adjectives and superlatives could be struck from the vocabulary of the advertising copywriter it would prob-

ably break his heart, but his effectiveness would be improved. He alone such language pleases; to the reader it is only bothersome bunk.

Our next point has to do with verbosity. Much copy reeks with superfluous words. This shows lack of ordinary literary skill. Most of the advertising copy could tell the story better in half as many words. Again, in the attempt to economize in words, we find omission of the verbs and articles necessary to make complete sentences. This merely exhibits ignorance of grammar. The primary object of course, is to promote sales. The skillful salesman of technical goods does not use sales talk. He only presents facts

clearly, completely, correctly, concisely and courteously . . . period.

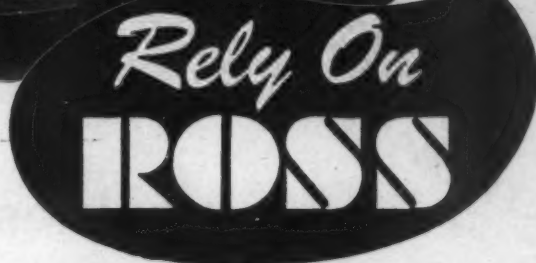
Finally, we would respectfully suggest to some advertising copywriters that they qualify themselves on what they are trying to describe and then state the facts correctly in the technically sophisticated language of the reader.

It is surprising that many advertising copy men do not know that it is virtually impossible to make a good article in quantities by methods of hand craftsmanship; that the best quality of manufactured goods are made on a production line by unskilled machine attendants and assemblers. The skill is in the engineering department and the tool shop where the dies, fixtures and gages are made. A hand-made sample is poor in comparison with a production item, no matter how much craftsmanship is used.

If advertising is to fulfill its function in providing information for the expert buyers of technical goods and machinery, it is of the highest importance that it check with the facts.

In the body of the reading matter, among the best eye-catchers are figures. The eye lands first on the picture, then jumps at any figures in the reading matter. Figures usually mean facts. The trained eye automatically jumps over the superlatives and the common bunk; if the matter seems interesting, it will concentrate on statements of fact. If the statements appear tricky, such as leaving out vital information for the purpose of compelling the reader to write in for further information, it makes him sore and may damage or kill his interest. The proper kind of a story will arrest his attention, make him cut out the ad or mark it for further attention. This is characteristic of certain companies whose advertisements compel attention before the advertisement itself is studied.

A few details will close my list of gripes. I don't care to be told to do it now, write today. I pay no attention to key letters. Who do you suppose is so naive as not to know there is no Dept. P in the advertiser's organization? If you ask me to mention the name of the publication, or you say nothing about it, I will probably do it.



to INCREASE CAPACITY OF STORAGE FACILITIES

Big loads, heavy loads—weighing 6,000 to 18,000 pounds—tiered swiftly, safely to height of 25 feet with ROSS Heavy Duty LIFT TRUCKS. That's just one of the many ways ROSS can reduce your handling costs, increase your plant's efficiency! Let our engineers show you how the ROSS System of heavy duty Lift Trucks and Straddle Carriers will easily tie in with your present handling methods.

Rely on The ROSS System . . . built to handle your BIG, BULKY, HEAVY LOADS . . . Write for comprehensive ROSS BOOK DA-86

THE ROSS CARRIER COMPANY

300 MILLER STREET, BENTON HARBOR, MICHIGAN, U. S. A.
DIRECT FACTORY BRANCHES AND DISTRIBUTORS THROUGHOUT THE WORLD

Don't tell me that the company's engineering department will go to work on my problems. Be truthful and call it the sales department or else don't mention it. The gag has been worked to death. Why not say simply: "The Company offers prompt advice in the application of its products. Our bulletin 1125-P gives the general information."

It is surplusage to tell me that the catalog is free, that there is no obligation, that to get a catalog I have to write, or request or send for it. In short, try to put nothing in the advertisement except those things a reasonably intelligent reader would not be expected to know.

To summarize: Go over the copy and

1. Eliminate all claims for quality or excellence; i. e., puffing.

2. Eliminate all tricks, catchwords eye-catchers and clever pictures of cats and dogs which do not apply directly to the article.

3. Eliminate every single word not vital to the story.

4. Cut out the cliches, and do the following:

- a. Give the reader credit for intelligence.

- b. Feed him news and nothing but news.

- c. Show a good picture of the product only, or of an interesting application of it where the product is the principal feature in the picture.

- d. Be clear.

- e. Be technically accurate and check with a competent technical engineer who knows the technical facts.

- f. Be scrupulously and meticulously truthful.

- g. Make the novel and interesting points of the product stand out vividly and separately, so they can be caught with the least effort and time.

- h. Don't forget the name of the advertiser and his address in plain type, easy to find, not concealed in a fancy monogram.

- i. Try out the copy on a representative sample of serious readers and check their reactions.

- j. Don't think that tooth-paste advertising can be most effectively applied to industrial products.

The writer can only offer, for what it is worth, a description of his own reactions to what he sees. If some of these comments seem elementary, the response is that the faults are all too common. There appears a dreadful sameness in the competing and overworked tricks for calling attention, when we look at the technical advertising pages in the mass. The one big trick seems often overlooked—the art of presenting new and interesting facts undiluted with bunk. According to these standards, the most effective advertising in technical publications is scarce, as examination of any of the magazines will show. It is done, however, and instances of good technical advertising are extremely refreshing.

Inquiries Into Sales

(Continued from page 55)

man's inquiry record form. This record is kept alive until the salesman reports he has completed the call.

Unless the inquiry requests solution to a specific problem, a form letter is sent out with the literature. Form letters have been written to cover practically every exigency. As we do not wish to send out samples without a field service man to show how the product should be used, a form letter informs the writer that our representative in his locality will call on him. Letters from foreign countries are routed through the export department for any specialized handling that is necessary.

On routine inquiries, the prospect receives a special business card of the Turco representative in his locality and also a map showing the location of warehouses, district offices and their telephone numbers. Making it easy for the prospect to telephone for any

further information, without so much as consulting a phone book, has paid off greatly in increased telephone orders.

One of the first problems that besets the originator of an inquiry follow-up system is the overwhelming load of detail inherent in recording, typing, informing all concerned and sending out the mail.

In our case, we wanted to send copies to the prospect, the district office, the representative, the general sales manager and retain one for advertising files.

A simple four-carbon, interleaved, snap-out form solved this problem. The form letter with an extra carbon is put on top of the deck and with the filling in of the prospect's name and address and a couple of other lines, all the necessary information is recorded and a copy is available for everybody.

The forms are each a different color so it doesn't require three

guesses to discover that they are referred to as "my pink," "your yellow" and "advertising's blue."

The district manager receives three copies: his file copy which he uses to keep track of inquiry results in his territory, the representative's copy and a "Report of Prospect Call" sheet.

The salesman's copy informs him of name, address and title of the prospect, what literature was sent him and from what publication it stemmed. During a recent recap of results from inquiries, we discovered some of the most successful salesmen, who turned in more than their share of business from advertising leads, seldom sold the item on which the reader requested more information. Turco manufactures several hundred specialized chemical compounds for cleaning problems such as cleaning floors, fluorescent lights, air conditioning filters or, perhaps something he had not even considered a problem.

We have a space on the salesman's copy on which he places a small reminder sticker. This sheet has all the information on it that the salesman requires for finding his prospect. Naturally, he glances at it immediately before entering the building. The bright colored sticker grabs his attention with something like this: "Collect your extra dividend! Look about. Have you offered this prospect a Turco solution to all his maintenance problems?"

Many times a person will write for an informative booklet even though he is completely happy with a competitive product. It would be impossible to replace that material with your own. In fact, he probably is all primed to blast your sales talk full of holes. Unless you have an overwhelmingly strong story, it's better to agree with him that as long as he is getting satisfactory results he should continue using the competitive product.

However, after beating your talk to a pulp, he probably will give any other suggestions you may have a more compassionate hearing.

After a salesman has made his call, he fills out a "Report of Prospect Call" sheet. This indicates whether he telephoned or made a personal call, whether the call resulted in a sale or whether the inquirer is a prospect for future business. Most important it reveals why the salesman did not make the sale.

This information gives us a continuing survey of what's going on in the field. On new products it gives us immediate information as to what competitive sales arguments we must overcome, how our pricing structure stacks up and how the product is being received.

Another device that is popular with the salesmen and which paves the way for call backs is a personal thank-you letter from the district manager. The salesman merely checks this item on his "Report of Prospect Call" sheet and the letter goes out.

Effectiveness of every phase of an advertising campaign is increased because it is translated into terms that every member of the organization can understand, sales!

SERVICE

STEPPED UP

AT LOWER COST FOR ALL AIR EXPRESS SHIPMENTS



More Planes in service, more flights, more space available for all kinds of traffic! Bigger planes, swifter planes, faster air schedules on many runs!

Every way you figure, Air Express service is stepped up to an all-time high at an all-time low in cost to the shipper.

Reduced Rates (see table) include special pick-up and delivery between airport towns and cities. Rapid air-rail schedules to and from 23,000 other communities in this country.

Foreign Service direct by air to and from scores of foreign countries — the world's best service, in the world's best planes.

Write Today for the Time and Rate Schedule on Air Express. It contains illuminating facts to help you solve many a shipping problem.

Air Express Division, Railway Express Agency, 230 Park Avenue, New York 17. Or ask for it at any Airline or Railway Express office.

RATES CUT 22% SINCE 1943 (U. S. A.)					
AIR MILES	2 lbs.	5 lbs.	25 lbs.	40 lbs.	Over 40 lbs. Cents per lb.
149	\$1.00	\$1.00	\$1.00	\$1.53	3.07c
349	1.02	1.16	2.30	3.68	9.31c
549	1.07	1.43	3.84	6.14	15.35c
1049	1.17	1.96	7.68	12.58	26.79c
2349	1.45	2.53	17.65	28.54	70.61c
Over 2350	1.47	3.68	18.42	29.47	73.68c
INTERNATIONAL RATES ALSO REDUCED					

AIR EXPRESS

GETS THERE FIRST

Phone AIR EXPRESS DIVISION, RAILWAY EXPRESS AGENCY
Representing the AIRLINES of the United States

The CAB Decision

(Continued from page 34)

or normal degree of irregular operations is required, 'irregular' being defined to include 'not regular' and 'unusual' as contrasted with 'usual' and 'frequent'."

Under this interpretation the Board points out, "that 'non-scheduled' has a far more restrictive meaning than the absence of a published time-table. Nor is it limited to the mere lack of a preconceived plan, for it is obvious that through a general custom or practice a fairly consistent course of conduct may evolve, as well as through a predetermined arrangement and it need only be uniform to the point of suggesting a moderately consistent service in order to be precluded from the scope of this exemption order. It is the thread or semblance of consistency which identifies an operation as one conducted with a reasonable degree of regularity."

This definition by the CAB is most important. It sets up a standard by which all present and proposed air cargo operations are to be tested. It means that those unable to meet its clear requirements must obtain certificates of convenience and necessity. The Board's interpretation and definition will make it impossible for a cargo service, other than that offered by a certificated airline, to be operated between major cities with sufficient regularity to attract heavy traffic. It has been demonstrated that regularity of service is what shippers demand.

The Board also has stated that "the inauguration of cargo services by new carriers which would parallel the routes of existing carriers should be passed upon in a certificate proceeding," particularly since wartime limitations have prevented the existing airlines

from developing their cargo operations as fully as they might otherwise have done.

The Board has applied its restrictions to non-scheduled operations between points where no reasonably direct scheduled air service now exists by stating that: "until the pattern of local service which will result from the feeder line decisions now pending has been finally determined upon and the results studied, it would not be appropriate to permit the inauguration and operation of services without express authorization simply for the reason that no service is now available."

Under the present Board ruling, the only field left open to an uncertificated operator is the hauling of cargo on contract. Contract air carriers do not come under the regulation of CAB or any other agency except the CAA, for safety regulations. However, the determination of whether an air carrier is a contract carrier, rather than a common carrier, may prove to be an intricate legal problem. It has been such a problem in motor transportation, and the Board may be guided by ICC experience in this type of determination. Although a carrier may confine its operations solely to the performance of specific contracts, the scope, and often the number of these contracts may make it a common carrier.

The action of the CAB naturally pleases the airlines, but they can no longer neglect the opportunity to develop real air cargo traffic. Unless they move quickly, as has American Airlines with the development of its contract airfreight division, they will not be serving shippers or receivers adequately, and new cargo carriers will be able to prove convenience and necessity and obtain operating rights. So far, the airlines have not given enough attention to the needs of the larger shippers or potential shippers.

Shippers will demand:

1. A cargo service "tailored" to their particular needs at low rates.
2. Flight flexibility with cargo trips not held to inflexible airline schedules.
3. Direct routing, particularly in connection with perishables, in



AIR FREIGHT NOW AS LOW AS 14c PER LB.!

*LA to NY Volume Contract Rate

New low rates, plus savings you make in labor and materials for packing and extra handling, often means you can ship with speed at no extra cost!

• Send for the story of the Line, "Adventures of the Flying Tigers," with valuable information on air freight.

THE FLYING TIGER LINE
MUNICIPAL AIRPORT, LOS ANGELES 45
ORegon 8-2281

New York: CHelsea 3-8206
Chicago: WABash 2308
San Francisco: So. S. F. 1995
Oklahoma City: 6-3364

Half a Ship Is Better Than None

Half a ship, even a 16,000 tonner, may be of questionable marine value but as a source of electricity for a power-needy community it can be a distinct asset and accordingly the United States Maritime Commission is turning over to the city of Anchorage, Alaska, the stern of a wrecked tanker. Within this otherwise useless segment of the S.S. Sackett's Harbor 6,000 h.p. steam turbines remain intact and operative and they will be a source of emergency electric power until the Alaska city can obtain permanent facilities.

Production Gains

Evidence that an important section of the nation's electrical manufacturing industry is making rapid strides toward overcoming strike-enforced production delays and material shortages to meet the requirements of users both of household appliances and heavy industrial equipment was disclosed recently by Gwilym A. Price, president, Westinghouse Electric Corp., who stated that his company's electric appliance division is turning out approximately 1,000 refrigerators a day; about 50 percent of its normal prewar output.

order to cut down costs and possible losses.

4. Accommodation to changes when shippers' points of origin and destination change to meet shipping and market conditions.

5. Solution of the weather problem. The airlines may work out an arrangement whereby when weather conditions are unfavorable over one route, the route of another company can be used.

6. Reduction of handlings, which can be brought about only through interchange of equipment. The airlines must take steps to avoid loading and unloading of through air cargo at junction points.

Coming Events

Sept. 10-14—American Chemical Society, exposition, Chicago.

Sept. 11-12—Society of Automotive Engineers, national tractor meeting, Milwaukee.

Sept. 16-20—Instrument Society of America, first conference and exhibit, Pittsburgh.

Oct. 1-4—Iron & Steel Exposition, Cleveland.

Oct. 3-5—National Electronic Conference, Chicago.

Oct. 3-5—Society of Automotive Engineers, aeronautic meeting and display, Los Angeles.

Oct. 14-15—Conference on Distribution, sponsored by Boston Chamber of Commerce, Harvard School of Business Administration, Boston College and MIT, Boston.

Oct. 29-Nov. 1—Refrigerator Equipment Mfrs. Assn., exposition, Cleveland.

Nov. 25-27—National Assn. Practical Refrigerating Engineers, St. Louis.

Dec. 2-4—Society of Automotive Engineers, air transport meeting, Chicago.

Dec. 2-7—National Power Show, New York.

Radio Control

(Continued from page 36)

set to zero. Satisfactory operation is possible through noise levels up to three decibels (3DB) below signal levels.

Centralized control of air highway, rail and water carriers through two-way radio is becoming standard practice. With the addition of selective calling the effectiveness and flexibility of the

radio system is increased immensely and a realm of new operating possibilities is opened to fleet operators.

Standards

The proposed revision of Simplified Practice Recommendation R208-45, Milk Shipping Cans, has been approved for promulgation, according to an announcement by the division of simplified practice of the National Bureau of Standards.



It's only a habit—

USE OF COMPLICATED SHIPPING PAPERS



Braniff was the first airline to introduce the Airbill—the new shipping document combining both waybill and freight-bill. It pays to save time by using Braniff streamlined handling of air cargo at new reduced rates, on regular schedules or contract operations.

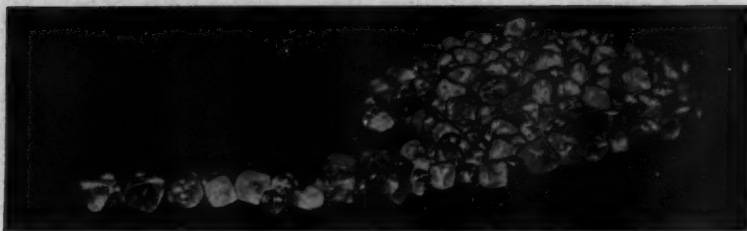


BRANIFF Air-FREIGHT

Phone Braniff Airways office at any city shown on this map, or write
Braniff Airways General Traffic Office, Love Field, Dallas 9, Texas.

**Back
YOUR
FUTURE**

With U.S.
SAVINGS BONDS



Industrial Diamonds

The use of diamonds in industry achieved an all-time high during the war. Education both of old and new customers to the recently developed uses of industrial diamonds promises a bright future for the industry.

By A. RICH

J. K. Smit & Sons, Inc.
New York

FROM the Congo, the Gold Coast, Angola and Sierra Leone, out of French West Africa, the Union of South Africa, and French Equatorial Africa come the majority of industrial diamonds. Interestingly enough, it is the diamond that rules the tempo of industry as well as the tempo of fashion.

Other sources outside of Africa which provide the world with fine diamonds are Brazil, Venezuela and British Guiana. During the war, the United Nations controlled 99.99 percent of the world's supply.

The United Nations owe in some measure the rapidity with which their munition production mounted to the industrial diamonds they possessed. These diamonds increased the speed of all types of metal grinding and made possible the close tolerances required of equipment of modern warfare.

The industrial diamond, set in a tool holder was applied to such production problems as the dressing and truing of thread grinding wheels.

The grinding wheels used to machine hard steel alloys are dressed by diamond pointed or diamond impregnated tools. As the use of these hard steel alloys has vaulted, diamond tools have kept pace.

The use of the diamond wheel broadens the scope of the diamond in industry. The diamond wheel is made of diamond grains bonded in a plastic or metal alloy. To create "diamond-impregnated" abrasive wheels, powdered metals of various types, containing diamond grains, electrically treated under pressure, are formed into masses of high strength. Such wheels are used to grind and lap high Brinnell alloy steel and cemented carbide tools.

The use of diamonds in industry achieved an all-time high in America during the war years. More and more factory managers learned the value of industrial diamonds. The number of men who know how to use diamond tools, diamond wheels and diamond powder has increased greatly. The education both of old and new customers to the recently developed uses of the industrial diamond promises a bright future for the industry.

Sales Structure

The most modern structure in Latin America for sales and servicing of mechanized farm and transportation equipment was opened in Hermosillo, Mexico by Maquinaria E Implementos del Pacifico, S. A., distributors of products of International Harvester Co.

Shortages . . .

(Continued from page 22)

nations requested a total of 302,000 tons. Australia was given 25,000 tons, South Africa 6,850, and the South Americans, 45,000 tons.

Jack Small, the dapper head of CPA, says the steel famine will last for months. Only one among a hundred requests can be met, or only one part of a unit of 100 can be supplied. Obviously, some demands will be met more fully and promptly than others. Small is vociferously opposed, in public, to all allocation and quota controls, but champions ultra OPA controls. Consistently with this philosophy, he refuses to place any kind of control upon the steel industry to distribute plate, sheets, structural shapes, or any other form of product. He insists voluntary allocation, as it may be practised by the industry, is adequate. The word here is generally passed along that steel production will not exceed 50 to 60 percent over-all, of normal.

Scrap Situation

The scrap situation is desperate, they tell us. Steel people have come to Washington and urged that many government surplus metal products should be sent to scrap yards. Last year the steel industry used 34,000,000 tons scrap and 37,200,000 tons pig iron. CPA reports pig iron increasingly short, off 15 percent, with the prospect very uncertain. Production has been maintained at about one-third of capacity. Price increases, subsidies, and controls over distribution are programmed.

The gross production of iron ore the first four months of this year totalled only 6,029,607 tons compared with 16,192,480 the same period last year. Our imports of iron ore totalled 111,329 gross tons, coming from Chile, Algeria, Tunisia, Canada, Norway, Greece, France, Morocco, Italy, Mexico, and the United Kingdom.

The coal puzzle seems chiefly one of transportation. Government officials privately doubt that even

the use of freight cars, and other non-coal-carrying vehicles, will place the coal where it should be distributed for industrial and domestic needs, before the lack of coal will cause acute and critical conditions.

Crude oil is one raw material which consistently has made production records, week after week. During the first week in June the output was reported in excess of 700,000,000 barrels. Gasoline stocks are higher than they were last year. Both heavy and light fuel oils are ahead of last years production records.

Rubber still is scarce. The present dickers between American, French, British, and Dutch negotiators on the price to be paid for natural rubber, when it is available, will determine the future of synthetic rubber. The President recently was urged by a government group to get the 25 synthetic plants back into the hands of private industry.

Aluminum is reported plentiful in the stockpiles and in potential

production, but the price is still considered too high to take the place of steel sheets. Production of tungsten has been resumed in the West, and substantial imports have been received from Bolivia and Brazil.

Faith in Gold

Mexico recently raised the price of gold from \$35 an ounce, the U. S. rate, to \$48 an ounce. Much gold has been bootlegged out of Mexico via Cuba to Europe, where it has been reported to go into hiding, against the stormy future. The Europeans have an age-old faith in gold, and no faith in paper currency. Our Treasury officials are not inclined to meet the Mexican rise. Production in the United States has dropped recently. Silver also dropped, more than gold. In the near future Congress is expected to legislate the price of silver from the present 71.01c an ounce to 90.3c and \$1.29 an ounce within two years.

Hides and skins, both domestic

and South American, are very scarce. The supply troubles tanners, leather processors, and manufacturers. Shoe manufacturers have a record prospect for production, but it is reported many shoes now are combinations of cloth, leather, rubber, and plastics.

In order to complete a tight control, every sawmill in the United States, regardless of size or lumber output, recently was placed under control by CPA. All lumber is very scarce. Paper products, for commerce or building, still are controlled. Sugar is expected to be very scarce well into 1948, despite the anticipated purchase of the Cuban crops for 1947-48. Corn is short, and has reduced operations of refiners. Industrial alcohol continues to be always just one jump ahead of more controls. Fats and oils, edible and nonedible, are expected to dwindle by reason of relief shipments abroad.

All industry is affected by these shortages. In the opinion of economists, it behooves businessmen to devise adjustments.

It's a matter of PERSONALITY

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Freight Cars

(Continued from page 32)

The increase in capacity of freight cars was accompanied by heavier dead weight, from 20.1 tons average per car in 1920 to 23.7 tons in 1940. An average of 1.7 tons less load with 3.6 tons more car weight resulted in an undesirable increase in the percent of the tonnage in freight trains made up of the dead weight of cars.

It would be desirable to know how much saving can be effected by reduction in the weight of freight cars, but as yet no agreement has been reached on a method by which the decrease in expenses can be estimated. Several discussions of the economics of light weight equipment and exhibits in railroad rate cases have shown figures for the annual saving per ton of weight reduction, most of which are between \$10 and \$32. An estimate for one railroad applied to box cars showed an annual sav-

ing of \$3.06 per ton, if the light weight car cost no more than the conventional car. Evidently this estimate has not been accepted because 30,000 light weight high strength steel box cars have been built, some by the identical road to which this estimate applied. In the absence of reliable specific data, railroads are acting on the basis that common sense proves that the cost of hauling extra dead weight is a substantial part of all transportation expenses.

Over-all figures, such as those previously quoted, obscure the influence of certain types of cars and further details cannot ordinarily be determined from standard statistics as published. However, some special data contained in an Interstate Commerce Commission report on rail freight service costs gave detailed information on earloadings by type of car for the year 1939.

In that year the average weight of revenue earload freight in box cars was 24.6 tons and of less than earload freight 5.4 tons, the average for all loads being 19.5 tons. About 12 percent of nonrevenue freight tonnage, or 15 percent of nonrevenue net ton mileage, also was hauled in box cars. From these statistics the conclusion can be reached that in 1939 about one-fourth of all box cars, with nominal capacity of 44.5 tons, were hauling average loads of 5.4 tons. The loading in that service was therefore 12 percent of earload capacity and about one-fourth of the dead weight of the car.

The average mileage of all freight cars in 1939 was 11,796 and box cars made an average of 11,635 miles of which 8,715 miles were loaded and 2,920 miles empty, the ratio of empty mileage to loaded being 33.5 percent.

Hopper and gondola cars are subject to operating conditions distinctly different from those for box cars. In 1939, the average nominal capacity of hoppers and gondolas was 55.7 tons and the average load carried 50.6 tons. These open top cars utilized 90.8 percent of the available rated capacity, whereas box cars used 55.3 percent when handling earload freight and only 12.1 percent when in l.e.l. service. The average mileage of hopper and gondola cars in 1939 was 8,137 about 30 percent less than the average box car mileage. The ratio of empty to loaded mileage was high, 85.7 percent, so the average open top car made 4,832 miles loaded and 3,755 empty.

If similar statistics for other years were available, the causes of the trend toward increase in the ratio of dead weight to payload could be analyzed more thoroughly. The available data on earloadings indicate that shippers of bulk commodities utilize additional cubic space or weight capacity both in open top cars and box cars.

However, the competition of highway trucks has taken from the railroads approximately one-half of the tonnage of l.e.l. freight transported. The average tonnage of l.e.l. shipments per car decreased markedly from 1920 to 1940 while the capacity and weight of box cars were increasing. The

TABLE I

Shifts in Domestic Transportation, 1939 to 1943

Type of Hauler	Revenue ton-miles (millions)			% of Total	
	1939	1943	% Change	1939	1943
Class I Railways	333,438	727,075	+118	43.4	68.8
Motor Trucks					
Common & contract haulers	20,500	37,000	+80	2.7	3.5
Private trucks	29,700	23,600	-26	3.9	2.2
Total Motor Trucks	50,200	60,600	+21	6.5	5.7
Water-borne					
Coastwise & intercoastal	225,896	27,000	-88	29.4	2.6
Great Lakes	76,312	111,604	+46	9.9	10.6
Inland waterways	19,937	25,365	+27	2.6	2.4
Total Water-borne	322,045	163,969	-49	41.9	15.6
Pipelines	63,100	105,000	+66	8.2	9.9
Airlines, Mail Express	11	50	+355	.001	.005
TOTAL DOMESTIC TRAFFIC	768,794	1,056,694	+37		

POSTWAR TRAFFIC ESTIMATES

Ton-Miles (Billions) for each type hauler	1947		1948		1949	
	Est. A	Est. C	Est. A	Est. C	Est. A	Est. C
Class I railroads	484.1	438.3	507.0	453.6	529.9	461.2
Intercity, for-hire trucks	30.6	27.2	32.3	28.3	34.0	28.9
Intercity, private trucks	52.2	44.6	56.0	47.1	59.8	48.4
Water-borne, domestic	397.2	361.2	415.2	373.2	433.2	379.2
Pipe lines	110.3	104.9	116.1	109.8	121.9	113.8
TOTALS	1074.4	976.2	1126.6	1012.0	1178.8	1031.5

Source: Interstate Commerce Commission. Estimate A, based on full national employment. Estimate C, based on lowest national employment.

importance of the low l.e.l. factor of utilization of car capacity in railroad freight transportation is evident from the fact that l.e.l. loadings made up 21.1 percent of all carloadings during 1940 and more than 25 percent of the total in 1938.

Because box cars are so heavy in relation to the normal loading, many railroads are adopting high strength steel for box car bodies, and more than 30,000 of such cars are in service. An interesting illustration of the change from conventional to high strength steel is provided by cars recently built by the Pennsylvania Railroad. The conventional 50 ft., 6 in. riveted box car of copper steel construction, class X-38, weighed 55,300 lb. A car of high strength steel, of the same dimensions and equal cubic capacity, assembled largely by welding, designated X-41, weighs 45,400 lb. This car has trucks which weigh 2,650 lb. less than those on the X-38. The weight reduction in the body alone due to the use of high strength steel and welding is 7,240 lb.

The adaptability and versatility

of high strength steels are shown by the variety of the equipment in which they were applied. Designers of box, automobile and refrigerator cars have used these steels in various combinations of spot welded, fusion welded and riveted constructions, which in general are intended to provide strength equal to that of conventional cars with a substantial reduction of dead weight.

Hopper, gondola and ore cars involve some problems not found in house cars, because open top equipment is often subject to more corrosive conditions, abrasion and abusive service. Some railroads want open top cars built of high strength steel with the maximum practical reduction of sections to decrease weight and increase capacity, at the same time aiming for strength and service life equal to conventional equipment. Others use these steels with no reduction of section, to decrease maintenance costs and lengthen the life of the car structure, while many roads choose compromise designs which give both a substantial increase in

service life and a substantial decrease in weight.

Because open top cars usually can carry the maximum permissible tonnage of lading, the advantage of weight saving in such equipment is evident, since any reduction in lightweight brings an equal increase in the load limit. Car designers and users often ask how much weight reduction can be made in hopper cars without a substantial increase in repair costs or shortening of the cars' service life. The answer to this question will vary slightly for different roads, because it depends on the type of lading and operating conditions. Some indications of the serviceability of high strength steel which has much improved corrosion resistance can be gained from experience with extremely light 50-ton hopper cars weighing 30,500 lb. built by the Pressed Steel Car Co., in 1935. In these cars, the sides and ends were reduced from 3/16 in. to 3/32 in.; the floors, usually 1/4 in., varied from 3/32 in. at the top to 5/32 in. at the bottom. After 11 years service on three roads, not one of these



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Fig. 16-24

Western Pattern Truck with heavy axle, rugged hardwood frame and steam boot handles. Two center straps.

Fig. 138 Dolly

A heavy hardwood frame dolly for boxes, crates, etc. Double ball race swivel casters with metal or rubber tired wheels. Nutting makes all types of wood or steel dollies with capacities up to 4000 lbs.

Fig. 419 Jack
Fig. 421 Live Skid

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cars has yet required overhauling for replacement of sides or floors.

During the war years, the railroads have demonstrated their ability to operate efficiently and profitably with a large volume of traffic. The trend now is toward more normal conditions and it is opportune to ask: What about the future? Estimates of traffic during the postwar years made by the ICC probably provide the best basis for looking ahead. The chart in Fig. 2 shows the variation in ton miles of freight since 1929 and the ICC postwar estimates. The upper lines, marked A, are based on full national employment. Line B is the average of several economists' forecasts, and the lowest line C is called a businessman's estimate.

In 1939 the Class I railways hauled 43.4 percent of the total revenue ton miles of domestic freight transportation; in 1943 the railroad proportion was 68.8 percent. The shift in freight traffic for these years and the ICC estimates for 1947, 1948 and 1949 are shown in Table I.

The ton mileage of water-borne traffic, shown in Fig. 2 and Table I, is based on the actual water mileage and, therefore, substantially is more than the increase of railroad ton mileage resulting from the transfer of such traffic to the rails. Since 1923, the trend of intercoastal freight shipment

has been downward but coastwise ton mileage increased nearly threefold from 1920 to 1929 and in 1940 was 80 percent above 1929. In prewar years, about 48 percent of the coastwise traffic was in the Atlantic, 29 percent in the Gulf and 23 percent in the Pacific.

Examination of the trend of traffic carried by various transportation agencies before and during the war indicates that probable decrease in production and resumption of coastal and intercoastal shipping will account for the drop in railroad traffic forecast by the ICC.

Higher Wages

Substantial increases in the costs of conducting transportation and maintaining facilities occurred during the war. From 1940 to 1944 freight service operating expenses per thousand gross ton miles went up from \$2.36 to \$2.86, or 21.2 percent, despite the 17 percent increase in train load. Higher wages will bring about another increase in unit costs. In the next few years competition will be intensified and if the railroads are to hold or increase their share of freight transportation above that which they enjoyed in the prewar era, they will be interested in adopting all the practical means of reducing over-all expenses. One of the methods which is continu-

ally gaining acceptance by more railroads is the use of high strength steel for freight car construction, because such materials permit reduction in dead weight of cars and increased potential payload capacity, thereby decreasing the ratio of tare ton miles to revenue ton miles.

A practical demonstration of what can be accomplished with lighter freight equipment built of high strength steel is shown in Fig. 3. The lower line of this chart shows the ratio of dead weight to load on one railroad that has heavy traffic. Comparing 1935 with 1920, the ratio for this road had risen from .502 to .567 or 13 percent. In 1935, the installation of lightweight high strength steel equipment was begun on this road. By 1940, the influence of the new cars had made itself felt to such an extent that the dead weight ratio had dropped from .567 to .456, 19.6 percent lower than 1935 and 9.2 percent below 1920. This is the lowest ratio which we have found for any railroad and the only known instance of a dead weight ratio for 1940 better than that of 1920. This achievement is particularly noteworthy in view of the fact that Class I railroads, considered as a whole, had an increase of 35.1 percent in the ratio of dead weight to lading from 1920 to 1940.

The Design Committee, American Railway Car Institute and the Committee on Car Construction, Mechanical Division, Asn. of American Railroads have been preparing designs of high strength steel freight cars with a view to having them adopted as alternate standards. It is expected that the forthcoming annual report of the Car Construction Committee will include designs for box cars, 50-ton and 70-ton hopper cars, and fixed-end and drop-end gondolas. This is an indication of the more general acceptance of light weight high strength steel freight cars. Through the years, the freight car has gradually been rendered stronger, lighter in proportion to its carrying capacity, safer and more reliable in operation. It will be still better as the result of improved design.

Printing Press



One flat car holds nine carrying sections of a large rotogravure printing press being shipped by R. Hoe & Co., Inc., New York, to the St. Louis Post-Dispatch. Largest of

its type completed and shipped since the end of the war, the entire machine is 125 ft. long and weighs 275 tons. Sections weighing up to 12 tons each are shipped intact.

Standardization

(Continued from page 50)

(ISA) which at the start of the war comprised the national standardizing bodies of 22 of the most industrially advanced nations. Before it became inactive, because of the war, the ISA had furthered the interests of international standardization through the promulgation of standards for motion picture films, ball bearings and methods of test for petroleum products.

Another international agency, the International Electrotechnical Committee (IEC) has effected international standardization in a number of basic matters including the fundamental units, definition of terms and ratings for electrical machinery. The United States committee of the IEC is affiliated with the electrical standards committee of the ASA.

The ASA, to quote from one of its publications, "acts as the authoritative American channel of

cooperation in international standardization matters, and has been active in this field since it was organized. It makes available to American industry information on the standardization work of foreign countries. Also, as an aid to foreign trade, it promotes a knowledge of American standards in foreign countries.

A matter of primary interest and importance to American industry is the ASA program directed to the adoption in Latin America of standards consistent with those of this country, thus reducing the risk of exclusion from that market of American products or of needlessly increasing the cost of compliance with its requirements. The attainment of this objective is being furthered by close collaboration with national standardizing bodies in Latin America, where these exist; by assistance to interested groups in countries where the formation of standardizing bodies is contemplated; by advancing the use of American standards

Truck Tires

(Continued from page 28)

palletization was an efficient system for handling tires. If the rubber industry, in cooperation with carriers and receivers of tires can make the system an economical one in commercial practice, it may be adopted on a large scale.

The industry is alert to the development of new marketing methods for truck tires. Tire sales of the major oil companies have increased tremendously in recent years. Chain stores also have become significant sales factors. The attitude of one tire producer toward new marketing outlets was expressed as follows:

"We are in business to serve our customers. If they want to buy truck tires through chain stores, co-ops or mail order houses, we will make them available at those outlets. It is fairly well established that the development of new marketing outlets has been responsible in part for lower distribution costs throughout the industry."

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Selling Handling Equipment

(Continued from page 40)

equipment purchased. However, the survey of the mill yard, was made in the winter with three to four feet of snow on the ground and

the ground was frozen. The road areas were plowed and looked like suitable terrain for the operation of large pneumatic-tired fork and

straddle trucks. Nothing was said and no questions were asked regarding the ground conditions in the sawmill's large outdoor storage area. Consequently, after the machinery had been delivered, in the summer, it was found that the storage area had previously been filled in with a good grade of bank sand, to a depth of from six inches to three feet. Since it had never been run over to any extent, it was found that the equipment bogged down when empty in this loose ground, and could not operate successfully. Due to the temporary condition of the mill site, it was not felt advisable to spend the additional \$8,000 or \$10,000 that might be required to hard surface the storage area.

Fortunately, the demand for the equipment was such that it could be moved to another site. But what had looked like a very feasible installation, proved to be a difficult one. The only factor overlooked was the ground condition of the storage area.

Recently, in surveying another installation, it was noted that some new equipment had been purchased for the loading of trucks. The problem was to get the material into the trucks from the end of the production line. Since the management knew little about the principles of materials handling, it had taken the recommendation of one of the salesmen calling at their plant and had purchased conveyor equipment, using a booster belt to raise the material up to a box car level, then using gravity conveyor through the box car and loading into a truck. Since the goods were not coming off at the end of the production line directly to the conveyors, they were placed on low lift platform skids, and put in storage. Consequently, when they were required to be loaded into trucks two men were needed to remove the skids to the end of the belt for feeding. Since efficient gravity could not be obtained from the box car level out to the nearest point where a truck could

New Handling Manual

MATERIALS HANDLING EQUIPMENT: A MODERN MANUAL. By MATTHEW W. POTTS; 192 pages, 5½ x 8, illustrated and indexed (\$2.50). Pittman Publishing Corp., 2 W. 45th St., New York 19, N. Y.

Machinery for handling materials was first used in the United States more than five generations ago. One of the earliest books on the subject in this country *The Young Millwright and Miller's Guide* by Oliver Evans was published in Philadelphia in 1795. Materials handling has come a long way since then. Today, the correct choice of equipment for the handling of materials during all phases of production and distribution often means the difference between dividends and deficits. Mr. Pott's book is on the dividend side.

This ready reference manual of the fundamentals of materials handling covers the most essential and more widely used types of equipment. It defines, describes and gives the applications of nearly 100 standard types of equipment under seven major classifications, namely, conveyors, tractors and trailers, elevators, trackless carriers, hand-operated equipment, hoisting machinery and miscellaneous equipment. Usual applications rather than unusual are discussed.

The problems and experiences encountered in the recent war in connection with materials handling disclosed that no satisfactory modern textbooks and manuals were available on the subject. To meet that need Mr. Potts prepared for publication in *DISTRIBUTION AGE* a series of articles which appeared in this paper from July, 1943 to Dec., 1944, much of which was reprinted by the Navy Department. The book under dis-

cussion here is a compilation and expansion of that material. It is abundantly illustrated with line cuts and well indexed.

Standardized nomenclature is used rather than vague trade names and colloquial terms. This feature makes the manual suitable for textbook use in engineering courses, and should help to offset some of the confusion that exists in purchasing and specifying equipment and in the direction of handling operations.

Mr. Potts, one of the foremost experts in his field, is materials handling consultant of *DISTRIBUTION AGE*, a member of the executive committee, American Society of Mechanical Engineers, Materials Handling Division, and a director of the International Materials Handling Council. During the war he was associated with the materials handling and equipment unit, depot operations branch, Office of the Quartermaster General, Washington, D. C., and also acted as technical consultant for the Bureau of Supplies and Accounts, U. S. Navy. He has designed and sold handling equipment of various types, has been engineer in charge of installing it, and has applied all varieties of equipment to numerous handling operations in a wide range of industrial plants, docks, terminals, wharves and warehouses.

Engineers, executives, designers, operators, traffic managers and others will find in this book a thorough discussion of the subject based on practical experience. It gives specific and basic information that is not likely to change materially for many years to come. —C.D.

be backed, one man was required to push the packages on the gravity conveyor, and additional men were required in the truck for stacking the material away. Since the railroad cars had to be shunted, it was necessary to erect and dismantle this equipment once a day.

At first glance, this conveyor system looked efficient, but it was found that the purchase of an industrial high lift platform truck, while costing a little more for the initial installation, would perform the operation cheaper and quicker, and also would be available for additional handling operations elsewhere about the plant.

When installing conveyor systems in existing buildings, the problem can become quite complicated. Frequently it is cheaper to install excess conveyor equipment in order to avoid costly major building changes. In one large installation, a continuous conveyor even had to be located in a certain portion of the building, which required the digging of pits, the changing of column footings, the removal of wooden building columns, and the installation of steel girders. Those changes were as expensive as the materials handling equipment which was installed.

Frequently, savings that can be made by increased production, because of better handling methods, will justify the total overall expenditure for materials handling equipment and building changes, but unless this is developed by competent engineers, costly and unnecessary mistakes can be made.

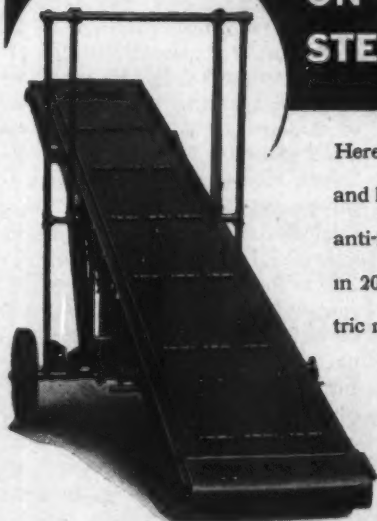
There are many instances when misapplication of equipment is brought about by a lack of knowledge on the part of management as well as of equipment salesman. Sometimes these mistakes are brought about by personal preferences. For example, one executive wanted to use a fork truck and pallet system, because he had read so much about its efficiency, and had seen a number of excellent installations. So he made a change in a continuous conveyor line layout and installed a fork truck and pallet system requiring all the materials to be handled from the conveyor system on to pallets, run through the storage department,

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and then rehandled from the pallets into trucks and cars. It would have been more efficient and more economical to have installed an additional conveyor system so that the 60 percent of the production which could have gone directly to the cars and trucks for loading could have been handled by means of conveyors. The 40 percent which had to go into stock because of peaks and valleys in sales and production schedules could have been handled with half the fork truck and pallet units.

Another difficulty in selling materials handling equipment is the lack of appreciation on the part of engineers and architects regarding the necessity of working out coordinated production and materials handling systems before designing the buildings which are to house them. Architects particularly lack knowledge of the important functions of the buildings that they are designing, and while they keep the cost of the building down, they materially increase the difficulty of utilizing the space in the building and the increase the cost of operating within the building space.

The cost of a building is an initial cost, and occurs once, but the mistakes made in building design which require excessive handling and which reduce the productive efficiency of space, continue year after year, and are a constant expense.

More attention must be paid in the future to the design of new production buildings, warehouses, terminals, etc., so as to reduce the cost of operation in such buildings. How this can be accomplished and who will have to do the educational work is a moot point.

Recently, the writer experienced the difficulty of being called in to assist in simplifying materials handling operations in a receiving and shipping department, only to find that the building had been designed, the steel ordered, and construction already started. The location of the beams, the door levels, the type of roll-up door that would be installed had been determined, and the clearances or heights above the platforms and the location of the beams, precluded the possibility of installing an overhead transfer

crane and monorail track, which would have permitted servicing the shipping and receiving platform and the packing department. There was not sufficient clearance for suspending the crane, and electric hoist in order to pick up the height and weight of load required.

When this new building is ready for occupancy, the men in the receiving and shipping department will have to perform a lot of manual lifting and moving for a period of years, all of which could have been avoided, if the handling requirements had been considered before the engineers and architects designed the building. They had given a lot of thought to the building construction, but none to its operational functions.

Manufacturers of materials handling equipment have a selling job to do, in order to educate and sell architects, engineers and management to consider the proper use of handling equipment, so as to avoid costly mistakes. They must train their sales personnel in the proper application not only of their equipment, but of materials handling in its entirety.

Marketing Sulphur

(Continued from page 52)

or loaded by the crane onto a conveyor system and directly into ships, river barges or freight cars.

Whether originating in Louisiana or Texas, the sulphur shipments may go directly to consumers in the United States, Canada and abroad or they may be stored temporarily at points closer to the consumer than the mines. Stocks of this type normally are maintained by producing companies at various locations along the Atlantic seaboard.

Sulphur may be consumed in any of several forms. By far the most commonly used form is sulphuric acid; in fact, about three fourths of all sulphur used is first converted into acid. The acid in turn has many hundreds of applications throughout industry. The major consuming industries and their estimated consumption in re-

cent years are shown in table 1.

One of the significant points about sulphur which, with its chemical versatility, makes its use so widespread is its inexpensiveness. Sulphur, as one of the 94 known elements, is cheaper pound for pound than any of the other elements. For example, aluminum sells for 15¢ a lb., beryllium for \$47 a lb., cobalt for \$1.50 a lb., copper for 14.1¢ a lb., gold for \$35 an oz., iridium for \$95 to \$100 an oz., lead for 8 1/4¢ a lb., and zinc for 8 1/4¢ a lb. The price of sulphur, however, is less than three quarters of one cent a pound.

Another significant feature, particularly from the consumer's standpoint, is the policy of producers in maintaining relatively even production. As a result, stocks of above ground sulphur were built up in years of low con-

sumption as a bulwark against future heavier demands. This not only tends to stabilize employment and other operating factors but assures customers of a steady, dependable supply.

When World War II began, the sulphur industry had more than a year's supply of sulphur mined and above ground, over 5,000,000 long tons. The industry also had extensive productive facilities. The wartime needs for sulphur were very large but despite the great increase in demands, production and stocks were adequate to fill every need promptly and at no increase in price. As a result of this accomplishment, sulphur never had to be rationed. It was one of the very few basic raw materials that, throughout the war, was never placed under priority or allocation control.

Fleet Service Garage

(Continued from page 48)

to see how each arrangement fitted exactly into their needs and practices.

Williams had managed to secure the interest and cooperation of all the men. Through his constant questions and asking of advice, all the men at the garage felt they had a part in the job. The result would have been surprising to one who had never before seen the result of such methods. Ideas that George never could have thought of alone were given to him, put into effect, and found to be clever solutions of problems. As a matter of fact, he placed such importance on this cooperation that he followed advice at times when he himself thought differently. Usually it worked out all right, although in a few cases when he preferred to encourage a man rather than insist on his own judg-

ment, the job had to be done over again. He considered it worth it.

Any executive who does not seek, use and reward the ideas of employees is losing something of tremendous value. Worse, is the practice of some executives actually to discourage the ideas of their subordinates.

One great principle of efficiency was followed throughout the entire reorganization: to eliminate even seconds of waste time on each operation will, when multiplied by time and the number of workmen, save uncounted hours. Such arrangements never would be apparent to anyone upon a casual inspection. Only the mechanics who worked there day after day could fully appreciate the thoroughness, often the ingenuity, with which things were arranged and devices invented. Days, even weeks of tiresome work went into the letter-

ing of labels with information to avoid uncertainty for mechanics as to the use of parts and to facilitate the ordering of replacements.

It was here that one of the major difficulties was encountered. Some parts were numbered one way, some another, some bore no distinguishing marks at all. To identify them was a problem. At times it became necessary to try them out in different places. There were thousands of different items. But, in the end, the stockroom contained nothing that was not clearly identified.

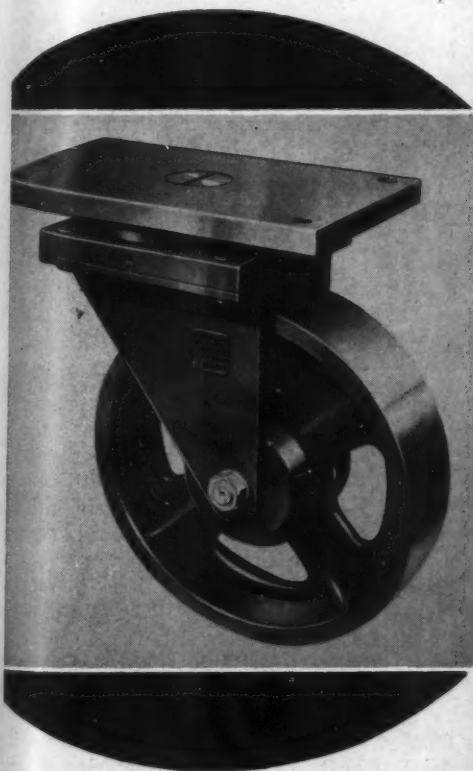
Electrical parts ranged from complete starters to battery bolts and terminals. Some starter gears had 10 teeth, others 11. Since they looked the same, the difference had to be clearly labelled. Very small electrical fittings were put in steel, subdivided drawers. Bottles might have been used, but when that is

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done mechanics have a habit of taking the entire bottle out to their benches, failing to return it, or, if they do return it, they put it back in the wrong place. Mechanics seem to have an urge to carry a complete stockroom on their own benches and it is a constant struggle to keep them from accumulating parts and tools that should be in the stockroom.

On the other hand, spools of cable for electric wiring must be taken to the job, because the amount to be needed is uncertain. Spools of cable were placed on one shelf of a bin, but in a trough so they would stay in place and yet be available for removal. Rolls of emery cloth were left with the cable in the same way.

Gaskets were next arranged and here a completely new method was invented. Usually, gaskets are found spread out on a large board and hung on hooks or pegs. Naturally this takes a large amount of wall space. Furthermore, if hung on hooks, hurried mechanics are likely to tear gasket holes or break cork or paper gaskets in two, in removing them from where they hang. If they are on pegs, they are continually dropping off. Since gaskets vary from large sizes, covering differential cases, to small ones for carburetors, sometimes not over a quarter inch in diameter, the ineffectiveness of a board is apparent.

Some stockrooms use drawers,

with pegs to keep the gaskets in place. This is economical in the use of space, but a mechanic cannot look over the entire stock quickly to see what he wants. If he is not familiar with the exact description and location, he must look it up in the catalog or hunt through the drawers.

One mechanic had a bright idea. Why not build shelves in two sections exactly the size of bins? Have the shelves about eight inches apart and slant them down from the back to the front, with pegs in the shelves. Another man suggested that since a large stock of head gaskets was always on hand, those shelves should be horizontal, with the shelves about five inches apart.

George refined the ideas somewhat. Knowing that pegs have a faculty of coming loose, he bought a supply of ordinary wire coat hooks. First, he marked the spot for the hole or inside edge of the gasket. Then he screwed a hook into the board at that spot. With a pair of bolt clippers he cut off all but the upright section of the hook, leaving a straight peg firmly attached in the wood. To prevent injuries, he rounded off the top of each peg with a file.

He went even further. The foreman told him that when gaskets came from the factory, they were correct in size and shape, but that cork gaskets would dry out and shrink. Before using them, it was

necessary to soak them in water and then stretch them. A certain number were broken in the process. So George selected brand new gaskets for measurement. From three to five pegs were placed wherever possible so that the gaskets fitted exactly around the pegs. Then they could not shrink.

When finished, the two gasket sections were really efficient. The gaskets were grouped according to use: oil pump, water pump, carburetor, manifold, cylinder heads, transmissions, differential and so on. A label was placed on each group of shelves and labels were placed also at the location of each gasket, with detailed information as to number, description and place of use. Mechanics had the advantage of being able to see the entire stock at a glance and remove any one without handling any drawer or disturbing any other gasket. The gaskets did not fall off, since the pegs were practically upright; yet with slanted shelves it was easy to remove them. The arrangement was economical as to space and could be fitted into the row of bin sections anywhere in the stockroom.

It might be mentioned that in constructing such a gasket rack, much time can be saved if it is possible to arrange the pegs before the shelves are fastened in place. The narrow space between shelves makes an awkward place to work.

(To be continued next month)

Lubricating Oil

(Continued from page 44)

of gallons. Stock oils are combined in varying proportions to meet specifications called for in the different lubricants. Each grade is given special treatment depending on the use it is to serve. In some cases, non-petroleum additives are also included, to give lubricants certain extra qualities, or to alter properties they already possess. There are additives that increase film strength of an oil, lower pour point, help prevent oxidation, or increase adhesive qualities.

Most lubricating oils leave the

refinery by rail, either in tank or box cars. Tank cars vary in capacity from 4,500 to 10,000 gal., and may have several compartments, making it possible to carry more than one type of oil in the same car. Most oil shipped by box-car is in 55-gal. drums. Heavy lubricants are shipped in tank cars heated by steam coils, so that the oil will flow readily when pumped out at the end of the trip.

Large quantities of finished oils are carried in tank car lots from the refinery direct to industrial users, particularly in the case of

such leading accounts as steel companies, automotive and farm equipment manufacturers, and others.

For smaller users of lubricating oils and greases, the distribution system is more complicated; there are two, three or more intermediate movements between the refinery and the consumer. The first movement is to key depots maintained in principal industrial areas. Here, after being pumped into storage tanks, the oil is drawn off into drums. It is then shipped by rail or truck either to factories or to bulk depots maintained in smaller

localities, where the process is repeated. In normal times, a 60 to 90-day supply is maintained at each distributing depot.

Throughout the distribution process, special care is taken to prevent oil from being contaminated by dirt, grit, sand or other abrasive matter. Particularly interesting in this respect is the way drums are reconditioned for re-use. First, dents are removed, after which drums are thoroughly washed with various caustic materials. They are then placed over steam jets and thoroughly steamed. Next, they are subjected to intense heat for proper drying, and then are repainted, both for added cleanliness and also for eye-appeal. A thorough inspection completes the process.

New drums are also inspected before being used. In addition, drums are sealed to prevent contamination while in shipment. Special care is taken to keep pumping apparatus clean, and tank cars are cleaned after each load.

While the great bulk of lube oil is shipped in tank car lots, or in 55-gal. drums, special lubricants, used only in relatively small quan-

ties, are packed in containers ranging in size from 4 oz. up. Containers for industrial greases vary from 8 oz. tubes to 500 lb. kegs.

Although the marketing of lubricants is but a small part of the giant petroleum distributing sys-

tem, it is one of the most vitally important. If the right oils do not reach the right place at the right time, plants must shut down. Without lubricants our whole distribution system would cease to function.

Cotton . . .

(Continued from page 24)

homes encouraging the thrifty practice of utilizing cotton bagging in home sewing.

4. Publicizing monthly the use of cotton in the fashion creations of some nationally known designer.

5. Intensive publicizing through suitable mediums of the results of current scientific research.

Cotton, representatives of the industry agree, must get its production and marketing costs on a competitive basis or sacrifice a very large percentage of its volume of consumption. Government and industry studies have indicated

"where" costs advantageously could be cut but great difficulties stand in the way of converting specific recommendations into practice.

The greater part of the cotton crop making up the 754 grades and staples produced in this country is still hand picked, the average production per farm being only 5 bales. Great waste and needless duplication of effort have been tolerated in all productive and marketing activities because cotton from generation to generation and up to recent times has

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Fig. 758



Fig. 772
1-Rack



Fig. 758
4-Wooden Stakes



Fig. 760
1-Bar Handle

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Fig. 769
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been without serious competition and for this reason has been able to maintain a leading role in the economic picture without recourse to modern technique or equipment.

A serious effort is now being made on the part of the more progressive elements in the industry to meet the challenge of costs but, so extensive are the reforms needed and so static much of the human element involved in the carrying out of them that progress necessarily will be slow. The National Cotton Council and other leading organizations, representative of the industry, despite their recent preoccupation with OPA and pressing problems of procurement are endeavoring to further simplified and standardized practices wherever possible. An immediate and urgent problem has been the necessity of speeding the procurement of mechanized equipment in the interests of improved yields of higher grades.

In recent years, cotton has faced more and more formidable competition in raw-fibre and end-product markets. The most serious threat to cotton's traditional vol-

ume comes from rayon which already has taken half the tire cord market and is seriously encroaching on other markets. "A rayon fibre," it has been said, "is made in the image of a cotton fibre; it is substituted for cotton on the cotton-spinning frame that formerly spun cotton and it is woven on a cotton loom." Rayon fibre is supplied to mills at net weight prices which compete with cotton's gross weight prices. Rayon fibre is supplied "clean," but cotton must be cleaned. When bagging, ties and waste, amounting to approximately 15 percent, are deducted cotton loses whatever small price advantage it might have had.

Cotton prices are based on a staple length of 15/16 in. while rayon is supplied without additional cost in any desired staple length. Each 1/32 in. increase in the staple length of cotton adds substantially to its price.

In 1920, the total consumption of rayon in the United States was the equivalent of only a few thousand bales of cotton. By 1943, consumption had increased to the

equivalent of nearly 1½ million bales of cotton. If present plans of the largest rayon producers do not miscarry, consumption in the near future will be the equivalent of more than 3 million bales of cotton per year.

New developments in fabrication techniques and machinery is making paper an increasingly serious competitor in end-product markets. While paper is not directly competitive judged from a quality standpoint as in the case of rayon, cheapness coupled with aggressive selling has enabled it to usurp many of cotton's former uses. Coarse fibres, which are produced largely in the Orient and limited largely to the manufacture of bags, bagging, cordage, twine and allied products, do not constitute a serious threat to cotton.

Foreign cotton, which is now selling at substantially lower prices than domestic, is viewed as likely to become an increasingly serious competitor and some concern is expressed over Russia's announcement that she intends to expand her production by 5 million bales annually.

Marketing via Warehouses

(Continued from page 60)

house to meet given specifications with the correct motor, but it was done, and done efficiently and economically. During the war, and under present competitive conditions, motors of this type have been so scarce as to do away with the maintenance of warehouse stocks. However, it is expected that when reconversion brings production back to normal this warehouse operation will again be resumed.

In another special spot stock operation, warehouses frequently fill small orders which call for the breaking of packages. Metal alloys, for example, are often packed in quantities larger than a small manufacturer wishes to buy at one time. The warehouse receives the alloys in kegs and distributes them in pound-lots.

Actually, of course, in opera-

tions of this type, the seller, in fact, has established a branch house without any of the attending detail. The "extras" which warehouses provide, in addition to the basic storage service, are tailored to aid each individual user with the marketing of his product.

Warehouses, for instance, frequently provide display services, normally not available for a marketer of industrial products, which sometimes furnish the final "push" in completing a sale. A potential customer will have been given all the "sell" for a particular piece of industrial equipment: specifications, pictures, performance claims, prices, etc. Perhaps he may not be sure which model or make will suit his purpose best. If he may inspect different models at a public warehouse usually the sale is made.

One warehouse, which I know, went even further than that for a certain account, the manufacturer of a stoker. It happened that the warehouse was using a stoker made by that company. Not only did they set up a display so that prospective customers could see the various models of stokers which the manufacturer made, but they made arrangements for prospects to view an actual demonstration of their own stoker at work.

In addition to aiding the original sale of a product, warehouses also offer extra services in the maintenance of products. Frequently, a break-down and work stoppage is prevented by reason of an emergency call to a public merchandise warehouse, often at night, where an adequate spot stock of parts is stored. Let me cite a case in point.

A hospital in a small town had a breakdown in its heating plant one night. Someone had failed to provide an extra gadget. A temporary hook-up would provide heat (on a reduced basis) for a few hours only. A telephone call was made to the night number of a public warehouse in a nearby city. A man left the hospital for the warehouse, where he was greeted on arrival by a warehouse employee waiting with the needed part. The result: the heating plant was restored to normal and a possible catastrophe was averted because a public merchandise warehouse had a stock of vitally needed parts when they were needed. Similar parts services kept the nation's vital production machinery in operation day and night during the war.

Other extra or "plus" services provided by warehousemen frequently are not concerned with the maintenance of spot stocks, but aid the distribution and marketing program of a manufacturer in some other way. A "plus" in packaging service, for example, is now being offered by a New Orleans warehouse to a company which exports paraffin oil for refining and manufacture abroad. The oil comes to the warehouse from Texas in tank cars. In New Orleans, warehouse employees pack the oil in drums and then store it, awaiting shipment.

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Industrial Distribution

(Continued from page 19)

for bumpers, and \$77 for mats and running boards have already been reported. In addition, the company says, palletization makes for better housekeeping, better stock control, and better use of floor space.

Results achieved by Ford are indicative of the shipping, economies open to almost every industrial distributor. The freight and handling savings which can be made on one carload may not seem important. But the shipper who multiplies savings on one car by the number of cars shipped a year will be surprised to find what a large reduction can be made in his distribution costs.

If there is to be an increase in palletized shipments of industrial products, the sales and traffic managers of shippers must work closely with the purchasing agents of their customers. Perhaps because so much attention has been given to sales and advertising, we sometimes think of distribution as being exclusively an "outbound" process, the movement of our goods to a customer. But distribution is "inbound" as well as "outbound" for purchasing is a basic marketing function and the purchasing agent is an important link in the distribution chain.

By cooperating with the shipper, the purchasing agent can help to achieve shipping and handling economies for his own firm as well as for the shipper. The wartime tests referred to showed that palletization can cut unloading time per car from 24 to nine man-hours, and the time required to store those supplies from 30 to nine man-hours.

Some shippers have objected to palletizing their shipments on the ground that their customers cannot handle palletized loads. It is true that a shipper must take account of the handling system of the receiver. When large quantities move between the two points, however, consideration should be given to coordinating the two systems so that economies can be

realized both by shipper and receiver.

Ford faced this problem when it asked independent suppliers to palletize parts they were sending to the auto company's plants. When Ford learned that some of these suppliers had no pallet-handling equipment, it sent engineers out to help them reorganize their handling systems, in effect gearing them into the Ford system.

If there is an increase in palletized shipments, costs may drop progressively as time goes on. For the trend toward palletization should encourage development both of throw-away or one-time pallets and also of pallet exchange pools. The more such shipments there are, the larger the market will be for a low-cost, expendable pallet which can be discarded at the end of a shipment, thereby eliminating freight costs for returning empty pallets.

Pallet Pool

If this type of pallet proves impractical, there will be a larger market for pallets owned and controlled by a central pooling agency which will rent pallets to shippers and arrange for re-use of empty pallets, in much the same way as a railroad furnishes cars to shippers. This system would permit shippers to palletize their loads without investing in pallets and without having to keep track of pallets after making shipments on them. Some shippers will be able to work out a two-way flow of pallets if their customers and suppliers are in the same area.

The palletized unit load is only one of the cost-cutting opportunities open to industrial distributors. Another is economizing through increasing the size of shipments.

Anyone familiar with materials handling knows that, as a general rule, unit handling costs go down when the size of the load increases. The same principle frequently is true in shipping. Although the

inventory investment at the point of receipt increases when the size of shipment is increased, against this added cost can often be placed economies in handling, billing, sales calls, freight, and delivery.

An illustrative example in this connection, though it concerns a consumer product, is the experience of the Standard Oil Co. of New Jersey, as told to the General Management Conference of the American Management Assn., last fall by Frank M. Surface, executive assistant to the president of the company.* About 12 years ago that company began to study its system of delivering products from bulk plants to service stations and other industrial and commercial customers. It found that the average delivery cost per gallon for a 50-gal. delivery was 2 1/3¢; for 100 gal. 1 1/4¢ and for 1,000 gal. 1/4¢. With very large deliveries, there was no significant difference in the per-gallon cost no matter whether the truck traveled five or 30 miles. It was obvious that the most effective way to cut delivery costs was to increase the size of deliveries.

The company began a campaign to get customers to take larger deliveries. The sales force was trained to sell larger orders, and larger trucks and larger storage facilities for customers were provided. Ten years later, deliveries of bulk gasoline had been stepped up from an average of 500 to 1,300 gal., the number of bulk plants reduced from 850 to 500, average truck capacity increased 57 percent, and the number of invoices per 1,000 gal. of gasoline reduced 60 percent. Average delivery cost per gallon was cut from 3 1/4¢ to 1 6/10¢, a decrease of about 50 percent. Annual savings were estimated at \$2,000,000.

The chances for economizing through increasing the size of shipments are even better for industrial goods than for consumer goods because the customers, industrial purchasing agents, plan and buy further ahead than household consumers do. They figure their costs more closely, and are

* "Distribution Costs—Key to Competitive Efficiency," General Management Series Number 134, American Management Assn.

quicker to take advantage of the possibility of saving a fraction of a cent per unit on shipping, handling, and billing costs.

A program of this sort, like a program to palletize shipments, requires a close relationship between purchasing agents and traffic managers at receiving points. It also requires the cooperation of the sales force.

Packaging is another point at which the industrial distributor may be able to cut his costs. The package for a consumer product must have consumer appeal, be easy to handle, and give adequate protection to the product. When designing the package for an industrial product, however, the distributor has only two criteria to satisfy: "Can this package be more efficiently handled than any other?" and "Will the package give necessary protection to the product?"

Both in consumer and industrial packaging, distributors must guard against the tendency to design packages which give more than the required protection against damage to products. Some reserve strength in packages is desirable, but the use of unnecessarily heavy boxes or unnecessary bracing raises packaging costs unjustifiably.

Still another field in which industrial distributors may be able to effect economies is in the use of public warehouses rather than company-operated storage facilities. The advantages of public warehousing have been covered many times in DISTRIBUTION AGE. Their storage and handling charges tend to be lower than in privately operated warehouses because their overhead charges for space and equipment are spread over a large volume of business. They relieve a company from the necessity of making long-term commitments for space and equipment, and of getting space, equipment, and personnel to handle peak loads. A public warehouse is a going concern and, therefore, usually more efficient than a new private warehouse. Public warehouses permit the placing of spot stocks for faster delivery to customers. Through issuance of warehouse receipts, they can be a financial aid. Their

insurance rates are usually low, and they offer important advantages in cutting transportation costs.

In industrial distribution as in consumer distribution, there are four basic steps to physical-distribution efficiency. Many companies other than Ford and Standard Oil could have been cited to illustrate how these steps are followed in working out a solution to physical-distribution problems.

First of all there must be the determination to find and adopt the most efficient methods and machines. Unless management recognizes that improvement in physical distribution is possible, little improvement can be made.

The second step is a thorough analysis of the present system, with a cost computation for each operation.

A careful research program to find the best method for each operation is the third step. Cost of each method should be figured to permit comparison of alternative methods.

New Ideas

Finally, there must be a more or less complete reorganization of the physical-distribution system so that all operations can be coordinated smoothly. Patching up an outmoded system with a few new ideas generally will not result in maximum efficiency.

It should also be recognized that the revamping of a physical-distribution system requires considerable experience with all types of distributive operations, familiarity with recent developments in the field, and complete objectivity in appraising present operations and proposed changes. The installation of new materials handling equipment and the adoption of new distributive procedures are technical matters requiring special skill.

Most industrial distributors will find opportunities for significant cost reductions in their physical-distribution operations. A vigorous effort by all to improve physical-distribution efficiency will result in wider markets and lower prices for the products of American industry.



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Electric Motors

(Continued from page 30)

There are two broad demands for shipment service, from the user or his contractor representative, and from the machinery manufacturer. The user, in many instances, cannot predict when he will want motors and, generally, requires short shipment when he does. Fortunately, his requirements usually are for standard types of motors which can be economically carried in stock. To meet these short cycle demands, GE has authorized for stock more than 33,000 ratings of industrial-type motors at an investment of 3½ million dollars during normal times when demand does not exceed production ability to the extent it does at present.

Warehouses are located in 28 cities, and these district warehouses are backed up by factory warehouses authorized to carry relief supplies of popular ratings and small supplies of less popular ratings which can be justified only on a national rather than a local demand basis. Through a centralized control system and machine tabulated activity cards, interchange of motors between warehouses is accomplished and production to match the warehouse demand is obtained under normal conditions.

The machinery builder, except in the case of large equipments sold on contract basis only, usually can anticipate his motor needs. He often builds machines to stock. The principal demand for special types of motors comes from the machinery builder. The best production service is obtained if the machine builder plans his demands and gets his motor orders in the motor builder's schedule for a period ahead equal to the current backlog of motor builders. Thus, he is assured of a steady flow of motors to match his machine production, and it is unnecessary to carry a large investment of motor inventory.

Small motors are packed in cartons; medium sized motors are

packed in crates; and large units are braced and studded in place in the railroad cars and protected with a covering.

Delivery policy calls for delivery of apparatus f.o.b. point of shipment with freight allowed to destination. Thus, transportation to any railroad destination within the 48 states or the District of Columbia will be prepaid free of expense to the purchaser, provided shipment is made in the Company's normal manner. The motor builder selects the point of origin of shipment, the method of transportation, and routing of shipment. In this manner, it is possible to make use of warehouses and warehouse consolidated cars, and provide other means for the apparatus to reach the destination by the cheapest safe means of transportation. Thus lowest overall delivered prices are obtained. By shipping f.o.b. point of shipment, a clear-cut relationship between consignee and carrier is established in the case of delay or damage to the equipment in transit. A memorandum of shipment is sent from the motor builder to the purchaser in lieu of bill of lading.

Service After Sale

In connection with service after sale, the engineering character of motor products and the size of capital investment have been recognized. Therefore, warranty to meet the specifications and to replace defective materials or workmanship extends for a relatively long period. Also, extensive arrangements have been made to provide maintenance assistance and accurate renewal parts procurement. Installation and maintenance and repair personnel and facilities have been located in 24 places throughout the United States to lend assistance and provide service no matter how long the equipment has been in service.

The warranty extends to the ultimate purchaser even though it passes through a reseller's hands, but the period of warranty starts timing from the date of original sale since the control of storage conditions are out of the motor manufacturer's hands. Experience has shown that on industrial motors the ultimate user holds GE responsible for high quality equipment and for repair and maintenance service even though the motors may have come to them as part of machines or through resellers. This is a saving to the reseller. An exception to this is the case of built-in partial motors or other special equipments furnished as an integral part of a complicated machine.

Each motor is equipped with a durable nameplate with significant information on it to identify the unit. Connection diagrams also are supplied on the motor, and maintenance and installation instructions are packed with every shipment.

On each nameplate is a model number. The same model number applies to all motors having the same specifications and renewal parts. In file, at the factory in numerical sequence for each model, is a complete drawing list for all of the parts and specifications of the unit built. Standard repair parts for the most popular models are kept in regional warehouses for prompt shipment. For many years after models have been changed, the tools and dies for making the parts are kept on hand.

As previously stated, in 24 locations throughout the country service shops are staffed and equipped to keep electric equipment running. Here, motors are rewound, repaired, rejuvenated as the need arises. Motors often are in key positions in continuous process production plants. The standardized dimensions make it possible to replace any defective motor with another quickly even though not of the original make. Also, the service shops are in a position to give emergency breakdown service, and many examples could be cited. Today's motors are so well built and protected that the percentage of failures is extremely low.

Petroleum . . .

(Continued from page 42)

to be one of the outstanding jobs of the whole war effort.

The petroleum marketer noted with immense satisfaction the speed with which rationing of gasoline was cancelled almost simultaneously with the announcement of the Japanese capitulation. The petroleum industry, given the means to do so, has never failed to make available, when needed and where needed, the necessary petroleum supplies, both in war and in peace.

The difficulties which have plagued petroleum distribution since V-J Day, of course, are similar to those which have harassed the whole reconversion program. But in addition to the general problems met in shifting from war economy to peacetime business, there have been special situations which have been particularly difficult for the filling station operator. These circumstances have not discouraged the marketing branch of the industry, but they have created a healthy dissatisfaction with the state of affairs and a hearty desire to overcome the handicaps and get on with the business of supplying the greatest civilian petroleum demand in history.

Many of the postwar difficulties are traceable to official Washington bureaus. The Veterans Housing Priority order, with its severe limitations on all types of new construction, has been particularly distressing to the filling station operator. The pent-up demand for repair and modernization of properties which were not properly maintained during the war period has been enormous. Construction limitations have worked a real hardship on the filling station operator and will continue to do so until there is recognition of the necessity for special consideration for this kind of construction.

The vast new housing projects which sprang up during the war period and which continue at a high rate of occupancy now because of the housing shortage, were not always served with suitable

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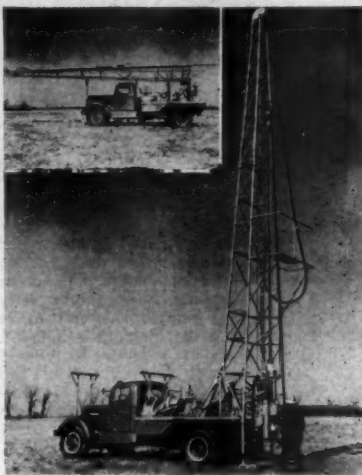
THE MINING SAFETY DEVICE CO.
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filling stations, so that there is a vast program of new station construction which will get under way as soon as possible. The petroleum marketer is anxious to make available, through conveniently located, modern filling stations, his products to the American motorist, just as he has always done in the past. Lifting of the construction limitations will be the signal for the start of this new construction and modernization program.

The tight labor supply has made it difficult for the filling station operator to compete in the labor market for properly qualified attendants. It would be difficult to over estimate the importance of having well qualified repair and service personnel in filling stations to maintain the millions of average motor cars which must be kept rolling until the automotive industry catches up with the demand for new cars. The same importance attaches to proper maintenance and servicing of the vast fleet of commercial trucks which are rolling over America's highways from coast to coast, doing the same vital transportation job in peace that they did in war. Despite the handicaps, filling stations today are manned with competent, well-trained personnel equipped to give the highest type of service. The petroleum marketer is impatient to improve and expand his services to the motoring public.

One of the most serious shortages affecting the petroleum industry today is metallic lead for tetraethyl fluid. The whole world is faced with a serious lead shortage as a result of the war. Greatly increased demand for lead of all kinds, for batteries, for paints, for cable, for housing and for all the other uses to which this important product is put, has caused part of the difficulty. But the abnormally low domestic price both for primary and secondary lead, stubbornly maintained by OPA, the crippling strikes in the lead mines and refineries, the reduced foreign purchases of metallic lead; these have been the real causes of the serious shortage. The problem has become so acute that top-level Washington officials have been forced to step in to see what could be done to avert real disaster.

"Black Gold"



Reaching down into the earth for oil is one of the interesting jobs in which motor trucks are called upon to take a role.

A good example of this type of equipment is found in the combination of White Super Power truck and Failing drill unit shown above, recently delivered to Leonard Hittshew of Sheridan, Wyo., for exploratory drilling in that area. This unit is able to negotiate rough, off-the-road terrain to the site of drilling operations. Once there, it can be set up quickly to explore strata underground. The drill tower, which extends more than 50 ft. into the air when ready for operation, can be folded forward over the truck.

Progress has been made, within recent days, toward solving the problem. The OPA has boosted the price both of primary and secondary lead, so that it will be possible to encourage the lead industry to undertake modest expansion of activities and prospecting for new lead supplies. The increased prices, in turn, have brought about settlement, in at least one important segment of the lead industry, of the strikes, and there is reason to believe that the settlements already reached will provide the pattern for agreement on remaining disputes. The government is making every effort to increase foreign purchases of metallic lead. Nevertheless, the Civilian Production Administration, which has reinstituted its Limitation Order, L-355 has found it necessary to reduce octane ratings for leaded gasolines and to limit

drastically the use of tetraethyl fluid in all petroleum products. There is no prospect that this situation will be improved in the immediate future, although the long-range prospects for relief are somewhat brighter.

Until the advent of the lead shortage, the petroleum marketer was squarely in the middle of a so-called "octane race," with refiners competing to offer higher and higher octane gasolines, the by-product of the aviation gasoline programs developed during the war period. That immediate problem, and it was a real competitive fact for the petroleum marketer to face, is happily postponed. Somewhat on a smaller scale is the competitive problem created by the introduction of new motor lubes, again the result of development of additives during the war period. The petroleum marketer must be alert to the new developments and to the importance of offering his customers the finest products.

Commercial rent control bills, being proposed in a number of the states, have added to the burden of the filling station operator. Almost without exception, these bills have proposed a freezing date for rents in 1942 or early 1943, when filling station rentals, tied as they are almost universally to gallonage figures, were at an all-time low. The petroleum marketer has been forced to demand exemption from the proposed commercial rent controls. He has been successful in meeting this threat, for the most part, since there is no demand for reduction in rentals in the filling station business. This fact incidentally, testifies to the fair rental policies pursued by the oil companies generally.

The petroleum marketer faces the future with confidence and enthusiasm. The petroleum industry is facing the greatest demand for its products in the history of the nation. Actual demands have exceeded by far the demands forecast by the Petroleum Administration and the Bureau of Mines at the end of the war, despite the facts that there are millions of cars that have gone off the road since 1941, and that new-car production has not yet begun to catch up with demand.

Industrial Packing . . .

(Continued from page 56)

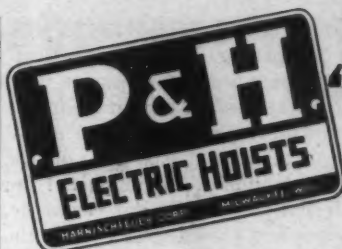
either of an open or enclosed crate, rather than in an ordinary or reinforced box. By crate, in this sense, is meant an engineered container, either opened or fully sheathed, built upward from a skidded, sill or platform base, with frame members reinforced by diagonal braces, struts and joists. It is a shipping unit which, unlike a box, does not depend upon the side walls, ends and top for structural strength.

A properly designed crate will insure less container failure. Most industrial equipment, motors, transformers, electric panels, generators, tooling machinery, automatic packaging and labeling machines, scales, central cooling system units, pumps, saws, drill punches and numerous other items, should be shipped in a rigid upright position. Too often, "this side up" is missed or ignored by freight handler and stevedore especially when the container presents each side as suitable for a base as the next. On the other hand, a crate with an unmistakable base, has far greater chance of remaining upright.

Finally, the "crate" type of construction permits a readier adaptation of the load-bearing frame members to meet the contact points of the equipment secured inside. In fact, if it is possible to build up all cradles and side supports from the platform which ultimately will become the base of the shipping unit other advantages will be gained. Any strains, jars, wracking or blows to the side walls or top in transit will not be transmitted to the equipment being conveyed.

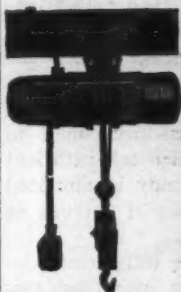
Any discussion of handling industrial equipment in transit would not be complete without consideration of those items which may be forwarded without further casing. When to crate and when to send forward uncrated goods is answered best after securing the following data:

Is the vehicle, machine or other equipment to be shipped within its own all-weather housing, or is it to be otherwise treated to with-



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stand exposure and the elements?

Will the material being forwarded absorb external blows, thrusts and abrasions without likelihood of damage?

Is the container without value for handling, stacking or merchandising purposes?

If all three of these questions can be answered definitely in the affirmative, then and only then, may industrial equipment be forwarded with only the precaution of securing to the bed of the carrier. To give several examples, sections of pipe and couplings for a large water main may be shipped merely secured to the floor of flat car or gondola. On the other hand, a large automatic business machine requires a container on all three of the above points: protection from the elements, from external damage and as a means of ready handling, to say nothing of merchandising reasons, such as the machine being leased, and some day having to be returned to the manufacturer in a reusable case.

Self-propelled rolling stock from steamrollers to warehouse tugs are

seldom crated except for export. In preparing automotive equipment for uncrated shipment, first comes necessity of safeguarding against corrosion; then the securing of all loose parts, and, finally, the protection of fragile parts from external damage. For example, frames are placed over headlights, windshields and panel boards. Such vehicles are then rolled into place on truck or railroad car, where blocks, braces, chocks, tie-downs and u-bolts are applied to anticipate and offset stresses and strains which multiply when in transit. Machinery self-sufficient on its own bases, may be mounted directly to the floor of a truck or railroad car.

Fortunately, for industrial America, tremendous progress was made during the recent war with regard to technical requirements in preparing heavy equipment for shipment. Crating was done for thousands upon thousands of vehicles of every description; for vast quantities of all types of heavy armament; for complete machine and wood-working shops; for

water systems and lighting equipment, and for the crating and disassembly of one of the most complex types of equipment, namely, aircraft.

Much of this work was performed by private contractors, co-operating with the government in research and experimentation to achieve improved techniques and formulae for transporting adequately the heaviest of equipment safely. This knowledge and experience today is available to every shipper of industrial equipment. While most manufacturers are keenly aware of this problem, constant consultation with heavy crating experts is advisable.

Recently, delivery of a heavy duty metal lathe was refused by an automotive plant because of major damage. Because it was supplied by an exchange dealer it will never be known if the faults developed in transit or from previous usage.

Everyone knows of similar stories. A crating expert may save you from any question of damage arising in transit.

Traffic and Sales

(Continued from page 33)

As an example, let us refer to one angle of an exceptional type of project such as the Big Inch Pipeline. In an installation of this sort the pipe is given a protective coating with a rust preventive product.

The sale of this rust preventive coating is highly competitive, and seldom repetitive, the jobs shifting as to locations. Sometimes the marketing includes not only the material, but also the work of putting it on the pipe before the latter is laid. It is this combination to which we refer.

Sales tactics are far different from those pertaining to consumer merchandise such as rugs or carpets or cereal breakfast foods, or even some other industrial products. Every new pipe line operation requires that the sales cost of the rust preventive coating, and the cost of labor, etc., must be figured to meet the specifications. In many

undertakings all forms of transportation, carriers by rail, truck, water, air, are given consideration.

The sales department has to figure very carefully and closely, especially on freight rates. A freight rate can be the deciding factor in losing or winning the contract. Along with the cost, the sales department must make sure whether it is cheaper to process the pipe at some point enroute, at origin, or at destination. The question of coating the pipe at a mill, or at a rail-head when to be delivered beyond by truck, also enters into the inquiry.

The sales department compiles the final price and submits the estimate, but the cost of transportation being most essential it falls upon the traffic department to provide the analysis of the freight rates and the transportation facilities. Without the aid of the traffic department the sales

department would be seriously handicapped insofar as correct freight rates, etc., are concerned.

Once the sales department succeeds in closing a bid for a rust preventive coating job, then assignment must be made. Schedules have to be prepared, and methods devised for delivery of the product. Working crews, tools and equipment must be at designated places at specified times. When construction in the field is under way various destinations are involved and shipments of the coating product must be so routed as to prevent loss of time and money. All of these transportation schedules and deliveries have to be correctly worked out by the traffic department.

The place of traffic management in assisting the sales department in the marketing of industrial products deserves more attention.

This collaboration begins prior

to the sale of a product, and continues on through until final delivery

In the development of new markets traffic management can be of definite help to the sales department. For instance, it can furnish charts and tables of freight rates, with maps, indicating existing advantages and disadvantages. It also can detect rate inequalities and take the necessary steps in establishing a proper scale in relation to other shippers.

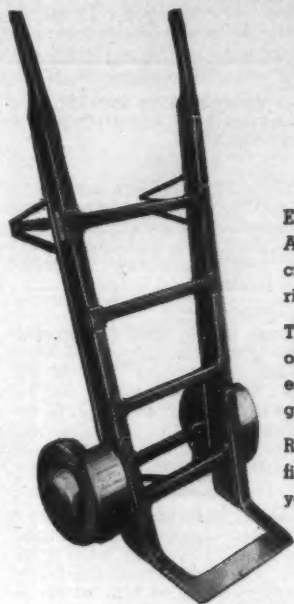
A certain manufacturer of high grade fire brick time after time unsuccessfully attempted to sell to a firm whose plant was located not far from the producer's point of shipment, which we shall describe as A. Then the manufacturer consulted a traffic department. That department made a study of freight rates not only from point A to the prospective customer's destination, but from other centers of fire brick production as well. The comparison disclosed that the carload freight rate from A was much higher per ton than from a nearby point of shipment. It also was shown that the rate from A could be lowered to the level of the competitive rate. Through the endeavor of the traffic department this was brought about with the result that the manufacturer at A was able to sell 70 carloads of fire brick to the firm which formerly had refused to purchase. Without the freight rate adjustment, secured through the efforts of a traffic department, the manufacturer at A would have continued to lose business. This is only one of several ways that traffic management can serve in the marketing of industrial products.

A company received an order for nearly 100 carloads of wood pulp from a wood pulp producer whose operations had been disrupted by the burning of part of its mill. The order was acceptable on every count except that a prohibitive class rate was in effect from point of origin to point of destination. The unsatisfactory situation concerning the rate existed because there had been no previous expectation of shipping wood pulp to the destination where that same commodity was produced.

A decision to reject the requis-

(Continued on page 93)

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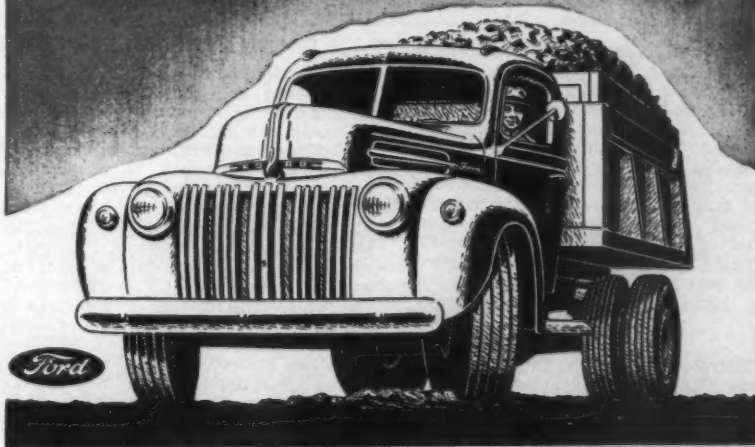
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People in Distribution



MARKETING

J. W. Weingartner has been made production control manager, Brown Instrument Co. Phila. **Charles Goodman** has taken over the duties of purchasing agent under Mr. Weingartner's supervision and **William Lawson** has been named assistant production control manager.

C. S. Davis, president, Borg-Warner, has announced the promotion of two top officials and plans for expanding production of the Morse Chain Co. of Ithaca, N. Y. and Detroit, Mich., a B-W subsidiary. **Frank M. Hawley**, is new president of the subsidiary and **Ray P. Johnson**, first vice president and assistant general manager.

The following appointments were made in the General Office, Line Material Co., Milwaukee: **Harold T. Reed**, general traffic manager; **W. M. Kroonemeyer**, assistant to general traffic manager; **C. A. Marves**, divisional traffic manager.

Cyrus S. Eaton, Cleveland industrialist and banker, and a group of associates, including **William R. Daley**, president of Otis & Co., have organized a new steel company, the Portsmouth Steel Corp. to acquire the Portsmouth works of Wheeling Steel Corp., Portsmouth, Ohio. **Elmer A. Schwartz** has been named president.

Clyde E. Cochran has retired as director of engineering, Elwell-Parker Electric Co., Cleveland, builder of power industrial trucks, and has been succeeded by **Dwight Hanchette**, associated with him there for many years.

Frank A. Wilcox has been named general purchasing agent, Kraft Foods Co. He will be assisted by **H. Joseph Kraft**, who has been promoted from assistant purchasing agent to purchasing agent. **A. C. Hoffman**, former general purchasing agent for raw material commodities and automotive equipment, has been named director of purchases and head of the department. **Fred G. Huston**, general purchasing agent will serve as associate director of the department until he retires.

Theodore J. Gross, former president, Container Testing Laboratories, New York and Chicago, has been named managing director, Shipping Container Institute. Mr.

Gross has pioneered in the application of test methods for all types of fiber containers.

Walter A. Metcalf has been appointed to the newly-created position of director of warehousing and transportation, Stop & Shop Supermarkets and Economy Grocery Stores of Boston.

George E. Price, Jr., purchasing agent for Goodyear Tire and Rubber Co. and one of the founders of the New York Purchasing Agents Assn., has been awarded the J. Shipman Gold Medal, purchasing's highest honor, by the National Assn. of Purchasing Agents.

Clement M. Gille has been elected vice president, Gulf Oil Corp. and Gulf Refining Co. and also vice president and a director, Gulf Research & Development Co., succeeding **W. V. Hartmann**, retired. He will be in charge of marketing.

Bert Dingley is retiring as president of the Marmon-Herrington Co., Inc., Indianapolis, is to be succeeded by **David M. Klausmeyer**, who has resigned as plant manager, Chevrolet Commercial Body Div., General Motors Corp. to join the Marmon-Herrington organization.

Carl Wilkins has been named advertising and sales promotion manager, Gerber Products Co., Fremont, Mich. He has been assisting **Earle Johnson**, vice president in charge of marketing. (Kline)

Joseph C. Elliff, formerly a vice president and assistant sales manager, Stewart-Warner Corp., has been elected vice president, Scott Radio Laboratories, Inc., Chicago. (Kline)

New officers American Management Assn. are: **John M. Hancock**, Lehman Brothers partner, a director of many companies in varied fields of industry and assistant to Bernard Baruch in his work as American representative on the Atomic Energy Commission of the United Nations, chairman of the board. **Alvin E. Dodd**, president. **Keith S. McHugh**, vice president, American Telephone and Telegraph Co., chairman, executive committee. Vice presidents: office management, **I. O. Royse**, Ralston Purina Co.; personnel, **Guy B. Arthur, Jr.**, The American Thread Co.; production, **L. C. Hill**, Eagle Pencil Co.; finance and accounts, **Dr. Jules I. Bogen**, editor, "The Journal of Commerce"; insur-

ance, **I. M. Carpenter**, Ebasco Services, Inc.; packaging, **E. A. Throckmorton**, Container Testing Laboratories, Inc.; Marketing, **A. A. Stambaugh**, vice president, Standard Oil Co., Ohio; treasurer, **James L. Madden**, Metropolitan Life Insurance Co.; secretary, **Henry J. Howlett**; assistant secretary, **James O. Rice**.

Ross G. Smith, traffic manager, Nashua Gummed & Coated Paper Co., Nashua, N. H., has returned from the Army Transportation Corps. **Austin W. Sanborn**, who acted as traffic manager during the war, has resumed his former duty as a sales representative. (Wellington)

TRANSPORTATION

Arthur Genet, formerly president, National Carloading Corp., has joined Chesapeake & Ohio and Pere Marquette Railways as assistant vice president—traffic.

New officers, Traffic Club of Chicago, are: President, **R. V. Craig**, general traffic manager, Allied Mills, Inc.; vice presidents; **W. R. Cox**, freight traffic manager, Pennsylvania Railroad, **Lee J. Quasey**, commerce counsel, National Live Stock Producers Assn., **R. M. Hitshaw**, freight traffic manager, Atchison, Topeka & Santa Fe Railway; secretary, **Otis A. Green**, western freight traffic manager, United States Lines Co.; treasurer, **R. J. Wallace**, traffic manager, Jaques Mfg. Co.

Virgil Johnson has been elected president, Fort Wayne (Ind.) Transportation Club, succeeding **J. C. Shollenberger**. Other officers named are: **N. M. Koehl**, vice president; **Royle Sprunger**, treasurer; and **Joseph Hamman** and **Gerald Ball**, directors. (Kline)

Thomas P. Geddes, vice president—controller, Overlakes Freight Corp., Detroit, has been elected to membership in the Controllers Institute of America.

Chester M. Mayer, president, Air Express International, Inc., announced that **Frank J. Eberle**, vice-president of the corporation, has opened its San Francisco office.

John F. Davidson, manager, Trans-Atlantic operations, American Airlines, Inc., has been appointed operations manager, Santa Fe Skyway, Inc.

(Continued from page 91)

tion was about to be made when the company's traffic department pointed out that a lower commodity rate could be obtained by filing a proposal with the railroad. Such action was taken, and the order was accepted. Thus a vendor, a purchaser, and a railroad gained by the transaction. If the seller had not had the advice and assistance of a competent traffic department there would have been an entirely different story.

Consider the ridiculous, but actual, plight of a manufacturer who constantly failed to make any sales of his product in a certain city.

This manufacturer produced copper sulphate (sulphate of copper). For some strange reason he described it as "blue stone" when asking the railroad for carload freight rates to destination B. Despite all his sales promotion, he could not dispose of his product to any industry located at B. He sought the counsel of his traffic department. Upon completing an investigation, the department informed him that the rate quotation of 24c per 100 lb. (\$4.80 per net ton) on which he based his sales price was a class rate effective on "blue stone." The traffic department further showed that a commodity rate of \$2.40 per net ton applied on copper sulphate from the point of shipment to destination B. On the basis of the lower rate the manufacturer eventually made sales to buyers in the city which we have referred to as B.

There is hardly any limit to the number of illustrations which could be included to denote the importance of traffic management. A traffic department examines and studies all transportation matters. Often it acts on its own initiative; frequently at the request of executives, especially of the sales department. A traffic department engages in research relating to competitive conditions, and points out the possibility of reaching new markets. It furnishes freight rate and route quotations, not only from the shipping point of its own company, but also from competitive points.

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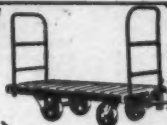


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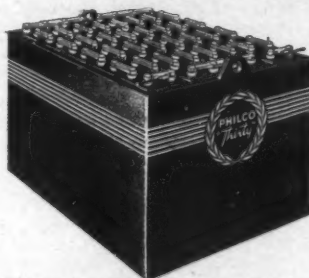


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Fig. 200-4 A popular Warehouse Truck



Getting Down to Cases In Distribution

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PACKING & PACKAGING • WAREHOUSING & MARKETING

By LEO T. PARKER
Legal Consultant

MARKETING



A STATE may enact a valid law which prohibits the advertising of goods and prices, if such a law is reasonably necessary for the promotion of the public safety, the safeguarding of the public health, the protection of the public morals or the advancement of the public welfare.

In *Merit Co. v. Director*, 65 N. E. (2d) 529, Mass., the validity of a state law was contested which provides that operators of service stations which sell gasoline must not display any sign relating to the price of motor fuel or gasoline.

The higher court upheld the validity of this state law, and said:

"The contention that the statute imposes on arbitrary and unreasonable restriction upon its business cannot be sustained."

Contracts

No person may enforce a contract based on fraud.

In *Severance v. Knight Co.*, 164 Pac. (2d) 522, Cal., it was shown that a company was about to become insolvent, and the president and an employee signed a contract by which the company sold to the employee merchandise for \$8,000 worth \$31,450.

The company did not become insolvent and the employee sued the company to compel it to fulfill the agreement. The higher court refused to enforce the contract.

Monopoly

According to the modern higher courts an illegal monopoly is any agreement between sellers of merchandise which tend to "fix" prices at which a commodity is or shall be sold.

In *U. S. Maltsters Assn. v. Federal Trade Commission*, 152 Fed. (2d) 161, the testimony showed that eighteen manufacturers formed a trade association.

The association currently receives from its members daily reports of merchandise sales and offers to sell, the date of sale, destination of shipment, grade and quantity of merchandise sold, and price received.

The Commission found that uniformity of delivered price was achieved by the members through the use of a common basing point. The Commission held that the facts showed that

members were guilty of violating laws prohibiting "fixing prices" of salable merchandise. The higher court approved the verdict, and said:

"The fact that petitioners utilized a system which enabled them to deliver malt at every point of destination at exactly the same price is a persuasive circumstance in itself."

TRANSPORTATION



MANY higher courts recently have held that a common carrier may sue and recover legal rates, although the carrier agreed to transport merchandise at rates lower than the lawful rates. Now, a higher court has held that this same rule of law is not applicable to private or contract carriers.

In *General Mills, Inc. v. Steele*, 154 Fed. (2d) 367, it was shown that a private carrier contracted to haul merchandise for a manufacturer for a period of three years for the compensation of his actual expenses plus ten percent. He performed his agreement, and then sued the manufacturer to recover additional compensation of several thousand dollars, claiming that he should have been paid more for his services in view of a state law which provides that the rates which a contract motor carrier must charge are not to be less than the minimum rates that a common carrier, performing substantially similar services, could charge.

The higher court refused to allow the private carrier additional compensation saying:

"The statute was not enacted for his (private carrier's) protection, and we are of the opinion that he has no right of action either under the contract or under the statute."

Joint Rates

In *Watab Paper Co. v. Northern Pac. Ry. Co.*, 154 Fed. (2d) 436, it was shown that the Minnesota Railroad and Warehouse Commission has jurisdiction to determine whether a carrier and its connecting line should establish joint rates.

The higher court held that a shipper could not recover alleged excessive freight charges where the evidence showed the Commission had found that the carrier and its connecting lines were entitled to file tariffs fixing joint rates.

Leases

In *Pan American Airways, Inc. v. Quilez*, 154 Fed. (2d) 496, it was shown that the owner of a vessel chartered it to another and was to be compensated by the percentage of the profits.

The court held the vessel owner not liable for lost cargo since the testimony proved that the vessel owner had no right to direct or control the vessel during transportation.

Obviously, this same rule of law applies to motor truck owners.

WAREHOUSING



IF A warehouseman desires to construct or operate a warehouse prohibited in a designated locality, he must have the city council change the zoning ordinance.

In *Lee v. Board of Adjustment*, 37 S. E. (2d) 128, N. C., it was shown that in violation to a city ordinance, the Board granted a permit for erection within a residential district of a warehouse and garage.

The owners of nearby property appealed to the higher court which reversed the permit, and said:

"The Board cannot permit a type of business or building prohibited by the ordinance, for to do so would be an amendment of the law and not a variance of its regulations."

Lease Clause

In *Smith v. Hoboken R. R., Warehouse & S. S. Connecting Co.*, 68 S. Ct. 947, the Supreme Court was asked to construe the provision of the Bankruptcy Act making enforceable an express agreement that the bankruptcy of a party to a lease shall allow the other party to decide whether to terminate the lease. The court held the provision applicable to a railroad reorganization proceeding.

Also, the court held that "forfeiture" clauses in leases will be liberally construed in favor of the bankrupt lessee.

Labor Standards

All employees who perform work on merchandise designed for interstate commerce are within the scope of the Federal Wage Act.

Industrial Design

(Continued from page 47)

Appearance is a most effective weapon with which a manufacturer can combat "sales fatigue"—the lack of response to his product by prospective buyers and by his own sales force.

For purpose of illustrating a basic principle, the 'before' and 'after' stages of products in several fields are illustrated. In each case the emphasis has been on the elimination of the unessential, in favor of clean lines and clean surfaces. The designer has created simplicity in terms of appearance and operation. Such devotion to the development of structural balance, neatness in design and simplicity of parts and functions finds its expression in economies of manufacture. Low cost production is a basic tenet of efficient industrial design.

Distribution benefits when production costs are lessened, since lower costs generally are reflected in lower prices. The manufacturer derives cumulative benefits from improved appearance and lower prices.

Production, distribution and design are interdependent; efficient design is closely tied in with the manufacturing processes and the distributive requirements. When an organization decides upon a redesign or a new design, essential information must be furnished

both by production and distribution departments. The designer must be informed on the history of the product, its competition, engineering developments planned, manufacturing facilities available, market problems, service complaints and other distribution arrangements.

The final test of industrial design is found in the sales figures. New materials constantly add to the comforts of life; improved design increases product interest, distinction and vitality; new and more efficient methods lower the cost of production. All of these factors profoundly affect distribution.

When sales fall off, management should make a critical examination of its product, as well as of its methods. Has the product a distinctive appearance or does it closely resemble competitive articles? Does it represent the future or reflect the past? Is the article encumbered by useless ornamentation? Have new materials and new colors been used effectively? Are function and appearance properly balanced?

The postwar world offers immense possibilities. Yet, more than ever manufacturers will have to meet the challenge of new products. Industry must be set to face such competition.

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freeze facilities, rental of space for manufacturing, offices and showrooms, rigging, sales representation, sample distribution, sorting, stevedoring and various other functions for efficient and economical distribution.

This special advertising section of public warehousing has been consolidated for ready reference and maximum utility. It includes merchandise, refrigerated, household goods and field warehouses. For shippers' convenience, states, cities and firms have been arranged alphabetically.

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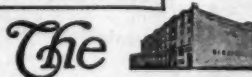


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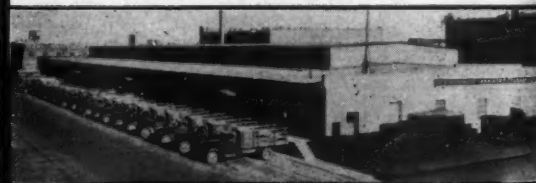


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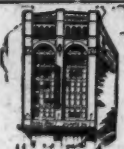
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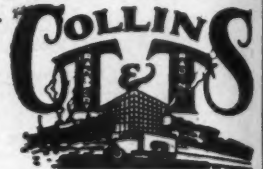
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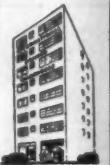
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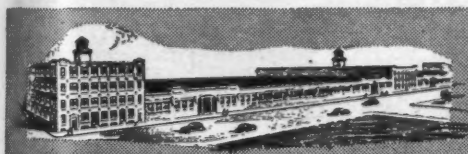
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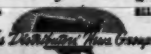
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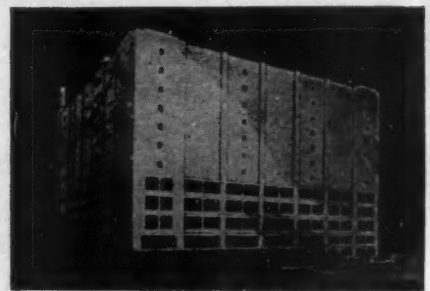
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
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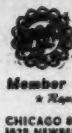
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Cold Storage for furs—Cold Storage lockers—Quick
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Automatic Sprinklers—Low Insurance Rates
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Ideal Distribution Point for Central Pennsylvania

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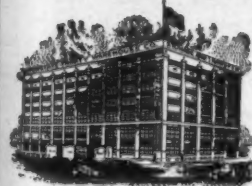
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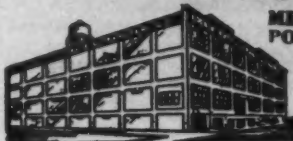
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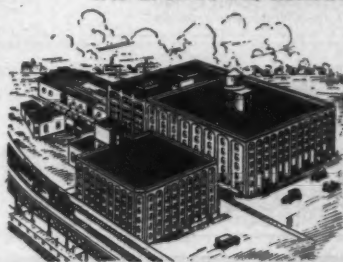
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In an article on page 38, Henry Lewis shows how a fleet service garage can be operated efficiently and economically.

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Member: N. F. W. A., Can. W. A.



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struction," says Charles L. Saperstein in
an article about shipping containers on
page 53.

why lift by hand

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DO IT EASIER,
FASTER, WITH
THIS

SERVICE Shoplifter

Check These Features:

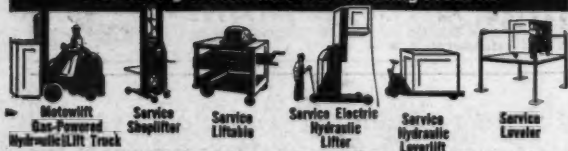
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Cost-Saving Service Material Handling Products



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Left: Davidson's Baltimore Terminal. Maintenance, repair and paint shops are in building at upper right. Center: One of the International KR-1's in the Davidson Fleet. Right, below: Medal struck to commemorate the 50th Anniversary of the Davidson Company.

Through 50 Years of Dependable Service DAVIDSON TRANSFER & STORAGE CO.

Demonstrates the Component Parts of the "Know-How"

● The Davidson brothers will tell you that the success of the Davidson Transfer & Storage Co., Baltimore, results from this:

A knowledge of the component parts that make up the "know-how" of truck transport.

They will point out that this knowledge began with their father 50 years ago, when a horse-drawn dray with the name Davidson on it appeared on the streets of Baltimore.

They will show you that their business employs 619 people, maintains five terminals and operates 358 pieces of equipment with International Trucks and Tractors predominant. They will show you how their business is conducted with almost watch-like precision.

They will, in short, show you evidence of business efficiency of the highest order.

But go out on the loading dock, into the shops, or through the offices and you find evidence of another kind. You find an employee morale that ranks

Davidson high among companies whose personnel relations are best. You find that long employee service records are common, until you are not surprised when a foreman or superintendent says, "Oh, I've been with Davidson for 25 years." And you find that the Davidson employees work their heads off to give shippers service, because good service to shippers means success for Davidson.

Sure, the Davidson operation is efficient. Probably none in the truck transport business is more efficient. But contributing greatly to Davidson efficiency is something even more admirable—the human something that exists between the Davidson management and its employees.

And after 50 years in the cartage and transport business, that human something is, most certainly, the thing in which the Davidsons take greatest pride.

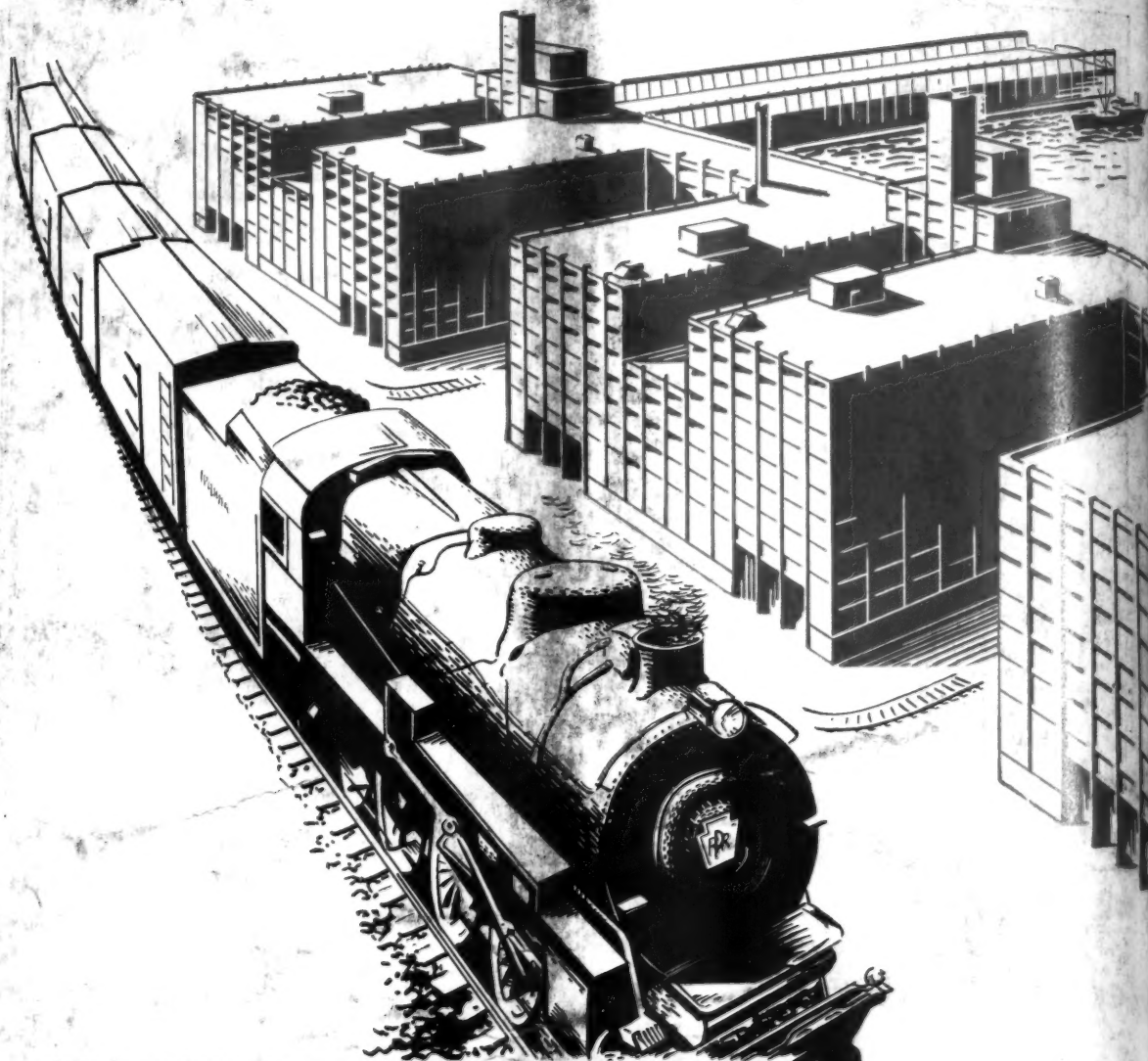
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Harborside's location in the teeming center of America's greatest industrial area gives it unique advantages. Its ultra-modern equipment and methods, trained personnel, and

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